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President, CAROLINE S. WOODRUFF

Executive Secretary, WILLARD E. GIVENS

Director of Research: William G. Carr; Associate Director: Frank W. Hubbard
Assistant Directors: Richard R. Foster, Ivan A. Booker, Hazel Davis

Research Assistants and Section Heads: Frances G. Bradley, Louise B. Sease, Helen H. Cox, Anna Haddow, Madaline K. Remmlein, Ruth Shirley, Mildred Wharton, and Vera D. Vinogradoff

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CONTENTS

	Page
FOREWORD	128
INTRODUCTION	129
I. TREND IN SCHOOL EXPENDITURES, 1870 TO 1936	131
The Long-Time Trend	131
Comparison of Downward Trends, 1875-1879 and 1930-1934	131
School Costs and Certain Related Trends	135
II. THE SCHOOL BUDGET, 1914 AND 1930	140
Selection of Period for Special Study	140
The 1914 School Budget	140
The 1930 School Budget	141
III. THE PURCHASING POWER OF THE SCHOOL DOLLAR	143
Changing Cost of Budgetary Items	144
Salaries and Wages	144
Textbooks	147
Instructional Supplies	148
Construction of School Buildings	149
School Building Sites	150
School Building Equipment	150
Operation of School Plants	150
Maintenance of School Plants	151
Interest on Indebtedness and Fixed Charges	151
Transportation of Pupils	151
Coordinate Activities and Services Other Than Transportation	152
Index of the Total Cost of Schooling	153
IV. THE AMOUNT OF SCHOOL SERVICES	155
Trend of Enrolments	155
Increase in School Attendance	156
Increased Attendance as a Factor in Higher School Costs	157
V. HIGHER EDUCATIONAL STANDARDS	158
Standards of Living and Standards of Educating	158
The Curriculum	158
Teachers	160
Instructional Methods and Materials	161
School Buildings and Equipment	162
Extension of School Organization	163
Trend of Increased Expenditures Caused by Added and Improved School Services	164
VI. FACTORS AFFECTING SCHOOL COST TRENDS, 1930 TO 1936	165
Purchasing Power of the School Dollar	165
School Enrolments and Attendance	166
Quality and Scope of the Educational Program	166
VII. SUMMARY	168
APPENDIX	171

FOREWORD

THE PUBLIC SCHOOLS belong to the people of America. The people have a right to know what education is attempting to do, how its program is being carried out, and what it is costing. It is an important function of educators to make the facts known, not only thru the local public relations programs, but thru professional groups.

Educators must keep constantly in mind that regardless of the excellence of the program, there are many people who think that school costs are excessive. Sometimes this feeling arises from the irritation stirred up by a recent tax bill. In other cases, an opinion is formed on the basis of a politically motivated statement "that schools are costing several thousand dollars more than last year." Such opinions held by the public, even tho based upon inaccurate or incomplete facts, may limit constructive and necessary educational development.

In any program designed to help the public understand school expenditures, the first step is to examine the trends in school costs. What was expended for public education in 1914 before the world experienced a cultural and political upheaval? What were the costs of schools in 1930 prior to recent economic maladjustments? How much more did education cost at the end of this period than it did at the beginning? Finally and most important of all, what has caused this rising cost?

The primary purpose of this publication of the Research Division is to show that the number of dollars spent does not reveal the true trends in school costs. Account must be taken of increases in pupil attendance, improvements in school services, and decreases in the purchasing power of the dollar. The real ability of schoolboards to purchase facilities for the children in attendance has not increased as rapidly as the total gross expenditures would seem to indicate. Those citizens who fail to realize these fundamental facts are apt to be misled by inaccurate statements as to the costs of public education.

In presenting this bulletin the Research Division not only supplies facts but suggests an improved approach to the analysis of school costs. It is believed that superintendents of schools and others within the profession will want to make similar studies on a community basis. These local facts should then be made known generally both to the staff and to laymen.

WILLARD E. GIVENS, *Executive Secretary,*
National Education Association.

Introduction

School expenditures require but a minor fraction of the nation's income. Between 1914 and 1929 less than 3 percent of our current national income was expended each year for public education of all types. In 1930—the year of largest school expenditure—the proportion was 3.2 percent. As a result of the economic depression, school expenditures in 1933-34 fell to less than two billion dollars. This was about 3.6 percent of the total national income. While income fell farther and faster than school expenditures in the early years of the depression, it has also increased faster than school expenditures in the years since 1933. In 1936 the schools' share in the national income was 3.1 percent—smaller proportionately than in 1930. The percent of total governmental costs represented by school expenditures in 1936 was lower than that recorded for any previous year.

Since 1922 the Research Division has made several studies of school expenditures as related to such factors as national income, wealth, tax collections, governmental costs, and expenditures for certain commodities and luxuries. In 1926 an attempt was made to account for the increased cost between 1914 and 1924. A similar study was made in 1932 for the period 1914 to 1930. Both of these investigations charged a major part of the increased cost to the depreciation of the dollar as indicated by changes in the general cost of living. The suggestion was made that the procedure might be refined by substituting for general cost of living indexes those based upon changes in the prices of goods purchased by school systems. Part III of this bulletin shows how this change of procedure has been worked out. While it has been impossible to obtain complete data on all items purchased by school systems, some progress has been made toward a refined analysis of increases in school costs.

Organization of Bulletin

This bulletin suggests that rising costs of education can be accounted for on much the same bases as increases in individual or family living costs. When in any year the head of a family discovers that the expenses of himself and his dependents are higher than they were in an earlier twelve-month period, he may be unable immediately to put his finger on the cause. When, however, he has calculated the exact amount of the increase in his expenditures and analyzed his budget to determine in what item, or items, this increase has occurred, he is almost sure to find that it is largely due to one or more of the three following causes:

1. *Decrease in the purchasing value of the dollar.* The cost of living, or general price level, has risen, so that less can be bought with each dollar than formerly.

2. *Increase in the size of the family which must be supported from the family income, or the greater needs of some member, or members, of the family.* More children, or the more expensive needs of older children as compared with younger, may involve increased family outlays.

3. *Higher standards of living.* The purchase of new goods and services may have increased expenses but may have added to the efficiency, wholesomeness, and enjoyment of life. Also, some expenditures may have been purely luxurious, but it is becoming increasingly difficult to draw a distinction between luxury and non-luxury expenditures. Many articles invented in the last half- or quarter-century, and formerly regarded as luxuries, have now come into common use and are looked upon as practical necessities.

So it is with the schools. Data presented in the following pages show that factors similar to those listed above account for the rise that has taken place in school expenditures.

In its analysis of the trend of annual school costs, the present study follows approximately the outline briefly sketched above relating to increased living expenditures. *First,* in order that the relative as well as the actual change between any two years may be readily determined, the long-time trend from 1870 to 1936 is studied (Part I) and its salient characteristics noted. Comparisons are drawn between this and other related contemporary trends. *Second,* the period from 1914 to 1930 is subjected to special scrutiny and the school expenditures for the beginning and final years of this period are compared (Part II), in order to learn in what item or items the increase has occurred. *Third,* causes of the rise in school expenditures are considered and statistical evidence is produced to show in what degree the direction of the trend between 1914 and 1930 has been influenced by the following three factors:

1. *Decline in purchasing value of the school dollar.* The value of the school dollar, like that of the private expenditure dollar, fluctuates from year

to year and the general trend of this value was downward between 1914 and 1930 (Part III).

2. *Increase in the size of the educational task.* The number of children for whom the schools are called upon to provide an education increased steadily between 1914 and 1930, especially in the relatively expensive high-school grades (Part IV).

3. *Higher standards of educating.* Standards of educating, like standards of living, were higher in 1930 than they were in 1914 (Part V).

Technics developed in the bulletin are applied to the period of declining prices following 1930 and to the new upturn, beginning in the biennium 1934-36 (Part VI). In the final section, the findings of the bulletin are summarized briefly (Part VII).

Applicability of Technics to Studies by Local School Systems

One aim of this bulletin has been to devise a method whereby local school systems can interpret their own expenditure trends. It should be possible to obtain locally more exact and detailed information on the amounts of certain items of the school budget and the yearly changes in unit prices of certain of these items, than is available on a nationwide scale. Because of the lack of such needed basic data for the nation as a whole, it has been at times necessary, in the following pages, to resort to approximations and estimates. Wherever this has been done, it has been clearly so stated, and it is believed that the use of these approximations and estimates does not affect the validity of the conclusions in any important degree.

The technics developed in Parts II-V are applicable to the statistics of any school system, however large or small, and to any period, whether of rising or falling prices.

I. Trends in School Expenditures, 1870 to 1936

An individual whose living expenses have risen cannot always state the reason for this rise without a study of the factors involved. "Why am I still as hard pressed as I was five years ago," he may ask himself, "when my income has been steadily increasing since that time?" The search for an answer to this question involves the asking of other questions such as, "Just how much more am I spending this year than I spent five years ago?" and "Has the increase in my budget been regular and even from year to year during the intervening period or has a sudden increase, or even a decrease which was later made up, occurred between any two years?"

Similarly in the analysis of rising school expenditures the first step is to determine the amount and characteristics of the upward trend.

The Long-Time Trend

Nationwide statistics on expenditures for public schools have been available since 1870.[1] In that year the cost of the schools was about 63 million dollars. In 1930 it was nearly 2,317 million dollars. This is an increase of 2,253 million dollars in sixty years. The trend in school costs was almost continuously upward over the entire period. Only during the four years beginning with 1876 and again in the four-year period following 1930 was there any decline in annual expenditures for public schools.

Between 1930 and 1934 school expenditures fell off 26 percent—to 1,720 million dollars. The figure of 1,968 million dollars for the school year 1936 suggests that, since 1934, the trend of school expenditures is again upward. The 1936 figure represents a 14 percent rise from 1934—a recovery of something less than half of the ground lost since 1930. Column 2 of Table 1 gives the figures on total school expenditures between 1870 and 1936, upon which the above statements are based.

Figure I depicts graphically the progress of mounting school costs between 1870 and 1930, the sharp drop following 1930, and the new upturn occurring in the biennium 1934-36. The irregular solid line shows the actual amount expended for public schools in each of the years since 1870, while the smooth broken line traces the general long-time trend of these expenditures.[2] The curve representing the general trend in the cost of schools slopes slightly downward between 1870 and 1883, then rises, slowly at first, but with a constantly accelerating rate, as 1930 is approached. It should be noticed that it does not change its direction during the depression years, in spite of the falling off in actual expenditures. This fact and the recovery which occurred in expenditures for public schools between 1934 and 1936 suggest that school costs will continue upward for the next several years.

Comparison of Downward Trends, 1875-79 and 1930-34

There are some interesting comparisons to be drawn between the two periods of declining school costs which occurred between 1875 and 1879 and between 1930 and 1934. In the first place they were of equal duration. In each of these periods a decline occurred in school expenditures in each of four successive years, as compared with the expenditures of the immediately preceding year, only to be followed in the fifth year by a new and rather sharp upward turn. In the second place, the slump in school expenditures, in each period, occurred approximately ten years after the close of a major war. It came, in each case, after a period of soaring expenditures immediately following the close of the war.

A glance at Figures II and III, however, reveals that there are also certain differences to be noted between these two periods. In the earlier period, after the Civil War, the drop in school expenditures was slight, both actually and relatively, as compared with the decline of the later post World War period. The 1879 figure which represented the low point of the depression in school costs of the earlier period was a little more than 7 million dollars, or less than 9 percent below that for 1875, the peak

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[1] See *Annual Report of the Commissioner of Education for 1889-90* (Vol. 1, p. 35) and for each year following thru 1917; also *Biennial Surveys of Education* for two-year periods beginning with 1916-18. The latest published *Biennial Survey* is for 1932-34. This bulletin also uses advance data furnished by the Office of Education, U. S. Dept. of the Interior, from the *Biennial Survey of Education* for 1934-36. (Washington, D. C.: Government Printing Office.)

[2] The general long-time trend, also known as the "secular" trend, was computed by the least squares method.

TABLE 1.—TREND OF SCHOOL EXPENDITURES, 1870 TO 1936, AND OTHER CONTEMPORARY TRENDS

Year	Expenditures for public elementary and secondary schools	United States population	Enrolments in public elementary and secondary schools	National income	Federal, state, and local government expenditures	School expenditures: Per capita of population	School expenditures: Per pupil enrolled	Percent school expenditures were of: National income	Percent school expenditures were of: All government costs
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1870	$63,396,666	38,655,016	6,871,552	.....	.....	$1.64	$9.23	....	....
1871	69,107,612	39,814,757	7,651,582	.....	.....	1.74	9.03	....	....
1872	74,234,476	40,974,498	7,815,306	.....	.....	1.81	9.50	....	....
1873	76,238,464	42,134,239	8,003,614	.....	.....	1.81	9.53	....	....
1874	80,054,286	43,293,980	8,444,251	.....	.....	1.85	9.48	....	....
1875	83,504,007	44,453,721	8,785,678	.....	.....	1.85	9.50	....	....
1876	83,082,578	45,613,462	8,869,115	.....	.....	1.88	9.37	....	....
1877	79,439,826	46,773,203	8,965,006	.....	.....	1.70	8.86	....	....
1878	79,083,260	47,932,945	9,438,883	.....	.....	1.65	8.38	....	....
1879	76,192,375	49,092,687	9,504,458	.....	.....	1.56	8.02	....	....
1880	78,094,687	50,262,382	9,867,595	.....	.....	1.56	7.91	....	....
1881	83,640,964	51,541,575	10,000,816	.....	.....	1.55	8.36	....	....
1882	88,990,466	52,820,768	10,211,578	.....	.....	1.68	8.72	....	....
1883	96,750,003	54,099,961	10,651,828	.....	.....	1.79	9.08	....	....
1884	103,212,837	55,379,154	10,982,364	.....	.....	1.86	9.40	....	....
1885	110,328,375	56,658,347	11,398,024	.....	.....	1.95	9.68	....	....
1886	113,322,545	57,937,540	11,664,460	.....	.....	1.96	9.72	....	....
1887	115,783,890	59,216,733	11,884,944	.....	.....	1.96	9.74	....	....
1888	124,244,911	60,495,927	12,182,600	.....	.....	2.05	10.20	....	....
1889	132,539,783	61,775,121	12,392,260	.....	.....	2.15	10.70	....	16.5[a]
1890	140,506,715	63,056,438	12,722,361	.....	855,000,000[a]	2.37	11.12	....	....
1891	147,494,809	64,361,124	13,050,132	.....	.....	2.23	11.30	....	....
1892	155,817,012	65,665,810	13,255,921	.....	.....	2.29	11.75	....	....
1893	164,171,057	66,970,496	13,483,340	.....	.....	2.45	12.18	....	....
1894	172,502,843	68,275,182	13,995,357	.....	.....	2.53	12.33	....	....
1895	175,809,279	69,579,868	14,243,765	.....	.....	2.53	12.34	....	....
1896	183,498,965	70,884,554	14,498,956	.....	.....	2.59	12.66	....	....
1897	187,682,269	72,189,240	14,828,059	.....	.....	2.60	12.66	....	....
1898	194,292,911	73,493,926	15,103,874	.....	.....	2.64	12.86	....	....
1899	200,154,577	74,798,612	15,176,219	.....	.....	2.68	13.19	....	....
1900	214,964,618	76,129,408	15,503,110	.....	.....	2.82	13.87	....	....
1901	227,465,664	77,747,402	15,688,602	.....	.....	2.93	14.50	....	....
1902	238,262,297	79,365,396	15,917,385	.....	.....	3.06	14.97	....	....
1903	252,804,081	80,983,390	15,999,717	.....	1,570,000,000[a]	3.12	15.80	....	16.1[a]
1904	273,216,227	82,601,384	16,256,038	.....	.....	3.31	16.81	....	....
1905	291,616,660	84,219,378	16,468,300	.....	.....	3.46	17.71	....	....

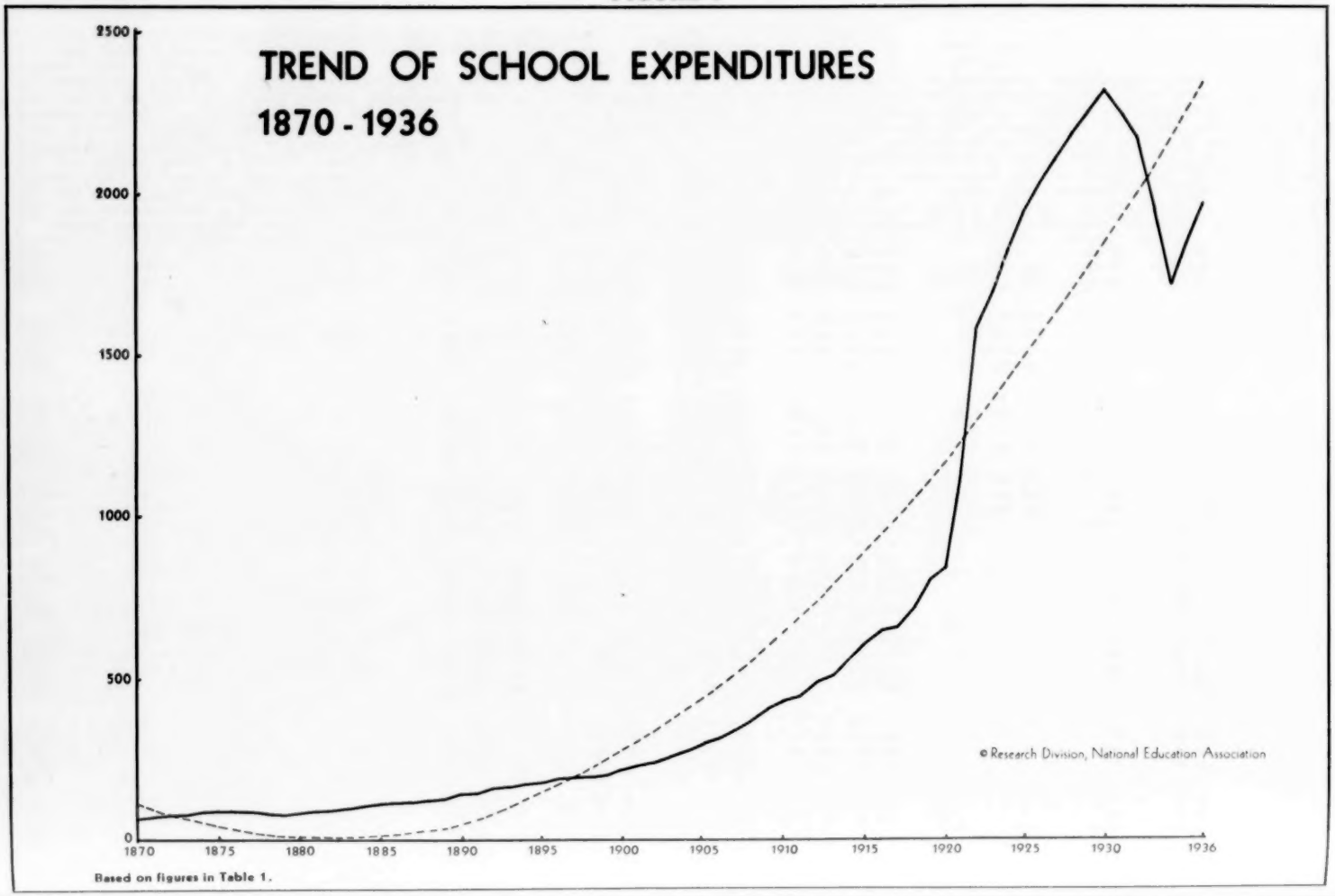
1906	307,765,659	85,837,372	16,641,970	.....	.....	3.59	18.49	....	....
1907	336,898,333	87,455,366	16,890,818	.....	.....	3.85	19.95	....	....
1908	371,344,410	89,073,360	17,061,962	.....	.....	4.17	21.76	....	....
1909	401,397,747	90,691,354	17,506,175	27,661,000,000[b]	.....	4.43	22.93	1.5[b]	....
1910	426,250,434	92,267,080	17,813,852	29,345,000,000[b]	.....	4.62	23.93	1.5[b]	....
1911	446,726,929	93,682,189	18,035,118	29,660,000,000[b]	.....	4.77	24.77	1.5[b]	....
1912	482,886,793	95,097,298	18,182,937	31,755,000,000[b]	.....	5.08	26.56	1.5[b]	....
1913	521,546,375	96,512,407	18,609,040	33,393,000,000[b]	2,919,000,000[a]	5.40	28.03	1.6[b]	17.8[a]
1914	555,077,146	97,927,516	19,153,786	33,227,000,000[b]	.....	5.67	28.98	1.7[b]	....
1915	605,460,785	99,342,625	19,704,209	64,690,000,000[b]	.....	6.09	30.73	1.7[b]	....
1916	640,717,053	100,757,735	20,351,687	40,585,000,000[b]	.....	6.36	31.48	1.6[b]	....
1917	702,197,571	102,172,845	20,602,602	48,314,000,000[b]	.....	6.87	34.08	1.5[b]	....
1918	763,678,089	103,587,955	20,853,516	56,658,000,000[b]	.....	7.47	36.62	1.4[b]	....
1919	899,914,646	105,003,065	21,215,916	60,161,000,000	.....	8.57	42.42	1.5	....
1920	1,036,151,204	106,543,031	21,578,316	72,689,000,000	.....	9.73	47.97	1.4	....
1921	1,308,411,250	108,207,853	22,408,773	58,521,000,000	.....	12.09	58.39	1.8	....
1922	1,580,671,296	109,872,675	23,239,227	59,837,000,000	.....	14.39	68.02	2.6	....
1923	1,700,707,616	111,537,497	23,764,017	69,895,000,000	8,918,000,000	15.25	71.59	2.4	19.1
1924	1,820,743,936	113,202,319	24,283,808	70,557,000,000	9,467,000,000	16.08	74.98	2.6	19.2
1925	1,946,096,912	114,867,141	24,650,291	75,026,000,000	9,937,000,000	16.94	78.95	2.6	19.6
1926	2,026,308,190	115,531,963	24,741,468	79,658,000,000	10,196,000,000	17.39	81.90	2.5	19.9
1927	2,105,322,414	118,196,785	24,960,582	77,608,000,000	10,523,000,000	17.81	84.35	2.7	20.0
1928	2,184,336,638	119,861,607	25,179,696	80,559,000,000	11,077,000,000	18.22	86.75	2.7	19.7
1929	2,250,563,511	121,526,429	24,528,856	83,631,000,000	11,709,000,000	18.52	88.50	2.6	19.2
1930	2,316,790,384	123,091,000	25,678,015	73,111,000,000	12,037,000,000	18.82	90.22	3.2	18.2
1931	2,245,720,470	124,113,000	25,976,728	56,089,000,000	12,479,000,000	18.09	86.45	4.0	18.0
1932	2,174,650,555	124,974,000	26,275,441	39,555,000,000	13,417,000,000	17.40	82.76	5.5	15.9
1933	1,947,377,892	125,770,000	26,354,817	39,247,000,000	12,232,000,000	15.48	73.89	5.0	14.5
1934	1,720,105,229	126,626,000	26,434,193	47,960,000,000	14,449,000,000	13.58	65.07	3.6	12.8
1935	1,844,001,714	127,521,000	26,400,646	53,118,000,000	14,931,000,000	14.46	69.85	3.5	12.4
1936	1,968,898,198	128,429,000	26,367,098	63,799,000,000[b]	.....	15.33	74.67	3.1[b]	....

Sources: Figures of columns 2 and 4, for the years 1870 thru 1916, are from the U. S. Department of the Interior, *Annual Reports of the Commissioner of Education*, for 1889-90 and subsequent years thru 1915-16; figures of these columns for the even years 1918 thru 1934, are from U. S. Department of the Interior, Office of Education, *Biennial Surveys of Education;* those for the odd years 1917 to 1935, inclusive, are estimated on the basis of the data for even years; figures of these columns for 1936 are advance figures, supplied by the Office of Education, from the *Biennial Survey of Education, 1934-1936*, soon to be published. The figures of column 3 are estimates by the U. S. Census Bureau. Those of column 5 for the years 1909 thru 1918 are from the National Bureau of Economic Research, *The National Income and Its Purchasing Power*, p. 74, while those for the years 1919 to 1935, inclusive, are revisions of estimates originally published by the National Bureau of Economic Research (for the years 1919 thru 1928) and the U. S. Department of Commerce (for the years 1929 thru 1935) contained in an article by Simon Kuznets, published in the Bulletin of the National Bureau of Economic Research for September 27, 1937. The 1936 figure in column 5 is an estimate compiled by the Division of Economic Research of the Bureau of Foreign and Domestic Commerce of the U. S. Department of Commerce. This figure and those for the years 1909-18, inclusive, are not strictly comparable with those for the years 1919 to 1935, inclusive. The figures of column 6 are from the National Industrial Conference Board, *Cost of Government in the United States, 1934-1936*, p. 5. Figures of column 7 and 8 are based on those of columns 2 and 3, and columns 2 and 4, respectively. The figures of columns 9 and 10 represent the relationship between columns 2 and 5 and columns 2 and 6, respectively.

[a] Not strictly comparable with the figures of this column for the years 1923-35.

[b] Not strictly comparable with the figures of this column for the years 1919-35.

FIGURE I



Based on figures in Table 1.

of school expenditures recorded up to that time. The revival in the next two years following 1879 was more than sufficient to make up for the loss suffered during the preceding four years. This upward trend which began in 1880 did not once waver during the entire fifty years to 1930.

School expenditures, in the four years following 1930, suffered a much greater fall than in the earlier four-year period. Here the loss was 596 million dollars, a reduction of about 26 percent from the 1930 peak. Figure III does not show the full extent of this drop as compared with that of 1875-79 because the curve of the later trend was computed in terms of the percentage of change from a much higher figure, and this had the effect of reducing the scale of Figure III as compared with that of Figure II. In spite of this fact, only a glance at Figure III is needed to see that the loss of income experienced by the schools in the years 1930-34 was unprecedentedly great. The new rise in school expenditures, after a duration of two years, was still insufficient to make up for even half of the loss suffered. Will this new rise continue as did that which began in 1880? We do not know. In 1937, however, the legislatures of a number of states provided for the more liberal support of schools from state sources during the 1938-40 biennium, altho in some cases the increased state support was a mere substitute for reduced local revenues.[3]

School Costs and Certain Related Trends

Has the steep rise observed in the trend of annual school expenditures been characteristic also of other contemporary trends? We know, for instance, that while school costs were increasing, the population of the nation was also increasing. What is the relation between changes in total population and the rising cost of schools?

Population—When the figures of Table 1, column 3, are compared with those of column 2, it is evident that the rise in school expenditures has been much faster than the increase in population. School expenditures in 1936

[3] National Education Association, Research Division. *High Spots of State School Legislation Passed in 1937.* Washington, D. C.: the Association, January 15, 1938. 21 p. (Mimeo.)

FIGURE II

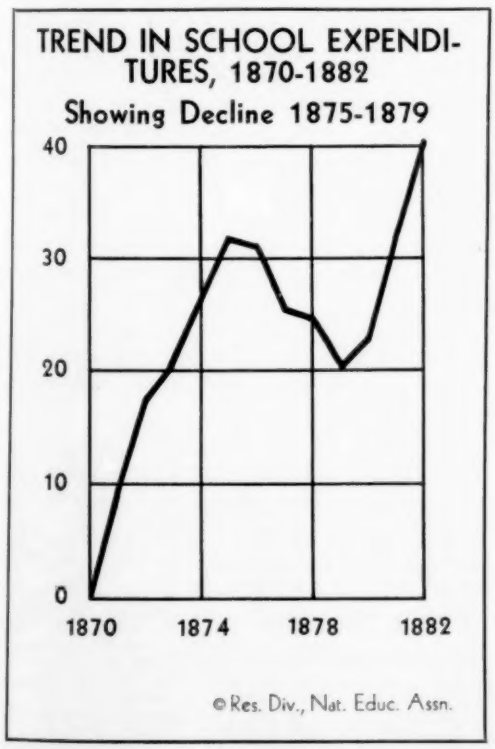
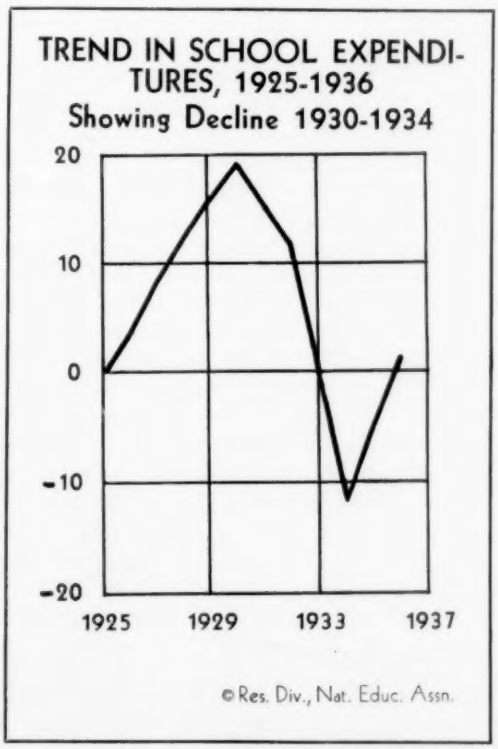


FIGURE III



Based on figures in Table 1.

were about 30 times as large as those of 1870. During the same period the population almost trebled. Schools cost each inhabitant of the United States an average of $1.64 in 1870, $18.82 in 1930, and $15.33 in 1936.

School enrolment—A later section of this bulletin will deal at some length with the relation of increased school enrolments and attendance to the cost of schools. It is sufficient to note here that the figures of column 4 of Table 1 reveal a rise of enrolments between 1870 and 1936 of 284 percent. The increase in school expenditures during the same period was more than eight times as great. The expenditure for schools for each pupil enrolled rose from $9.23 in 1870 to $90.22 in 1930 and then dropped to $74.67 in 1936. Public school enrolments reached their peak in 1934—the low point of the recent decline in school expenditures—and fell off slightly during the biennium 1934-36. All of this decrease in enrolment occurred in the elementary schools (from 20,765,037 in 1934 to 20,392,561 in 1936). High-school enrolments continued to increase (from 5,669,156 in 1934 to 5,974,537 in 1936), resulting in a net decrease of 67,095 children in all grades. More will be said about this difference later.

National income—The National Bureau of Economic Research has published estimates of national income in the United States for each year between 1909 and 1928.[4] For more recent years, beginning with 1929, the Division of Economic Research of the Commerce Department's Bureau of Foreign and Domestic Commerce has compiled similar estimates.[5] While the methods used in arriving at the figures of these two series and the concepts upon which they are based are in close resemblance, they are not alike in all details. In order, therefore, that the Commerce Department's estimates and those of the National Bureau of Economic Research might be combined to form a single series, Simon Kuznets made adjustments in the figures originally published, as far back as 1919, thus insuring their comparability from that year forward thru 1935.[6] The adjusted figures are shown in column 5 of Table 1. Estimates compiled for the earlier years, 1909 thru 1918, have not been adjusted and are, therefore, not strictly comparable with those included in column 5 for 1919 and later years. They are considered separately in relation to the trend of school costs. They show that during the period 1909 thru 1918 the relative increase in national income was greater than the relative increase in the cost of public schools—105 percent as compared with 90 percent. Thruout this entire period, the relative share of the schools in the total national income remained approximately the same—about 1.5 percent.

In 1919, according to the figures as adjusted by Kuznets, the part of the total income of the nation spent for public schools was slightly less than 1.5 percent. Four years of neglect, during which all the efforts of the nation were directed toward the successful prosecution of the World War, had left the schools in a condition which constituted a national emergency. Teachers were undertrained and underpaid even in relation to their lack of training. Approximately 6 percent of the population was illiterate. The school plant was antiquated and inadequate to meet the needs of increasing enrolments. The World War, however, had created in the people of the United States a realization of the shortcomings of the schools, on the one hand, and on the other, an awareness of the importance of public education in their national life and a willingness to support the kind of schools needed. When, during the brief depression of 1921-22, the national income fell from 72 billion to 59 billion dollars, expenditures for schools were not reduced. The proportion of the total income spent for school purposes rose to 2.6 percent during the 1920-22 biennium. It failed to make any further appreciable advance, however, but remained practically stationary thruout the period of generally rising costs to 1930.

Likewise, approximately the same proportion of the national income was spent for schools in the final year as was spent in the beginning year of the 1930-36 period. This proportion was 3.1 percent in 1936, as compared with 3.2 percent in 1930. When the national income began to decline in 1929,

[4] National Bureau of Economic Research. *The National Income and Its Purchasing Power*. New York: the Bureau, 1930. p. 70.
[5] U. S. Department of Commerce, Bureau of Foreign and Domestic Commerce, Division of Economic Research. *National Income 1929-1936*. Washington, D. C.: Government Printing Office, 1937. p. 11.
[6] Kuznets, Simon. *National Income 1919-1935*. Bulletin 66 of the National Bureau of Economic Research. New York: the Bureau, September 27, 1937. p. 2.

school expenditures, like other public expenditures, lagged behind for a year and reached their peak in 1930. They fell slightly in 1931 and 1932, but not as fast as the national income. In 1932, 5.5 percent of the total income of the nation was spent for public schools. The big drop in school expenditures occurred between 1932 and 1934, and by the end of that biennium the schools were once more receiving only 3.6 percent of the national income. This proportion had further decreased to 3.1 percent in 1936, or slightly less than that spent for schools in 1930.

Cost of government—While the cost of schools has increased faster than the general population or the number of children enrolled in public schools and has consumed a slightly rising proportion of the national income over a long span of years, it represented a lower percent of the total cost of government in the United States in 1935 than in any other year for which we have comparable data. By the total cost of government is meant the total amount spent by all governmental units, federal, state, and local, exclusive of payments for the retirement of debt. Federal disbursements for tax refunds and expenses of the District of Columbia are also excluded. Comparable figures on the cost of government, thus defined, are available from the publications of the National Industrial Conference Board for each year from 1923 thru 1935. These figures are shown in Table 1, column 6. The Conference Board has also published estimates of government costs in 1890, 1903, and 1913, which are included in column 6 of Table 1, altho they are not based upon exactly the same concept of the cost of government as that described above. These figures are disproportionately high in comparison with those for 1923 and later years, because they include payments on indebtedness and because they have not been adjusted to eliminate certain duplications. Because of the fact that these figures are too high to be strictly comparable with those for later years, it would be expected that the percentage relationship of school costs to these figures would be disproportionately low in comparison with later years. However this may be, expenditures for public schools in 1890, 1903, and 1913 were equal to 16.5, 16.1, and 17.8 percent of total government expenditures in those years respectively, while school costs in 1935 represented only 12.4 percent of total governmental costs.

Beginning with 1923 the proportion of the total cost of government represented by public school expenditures rose slightly from 19.1 percent to 20 percent in 1927. Since 1927 the schools have accounted for a steadily decreasing proportion of governmental expenditures. This statement is true, not only with respect to the relation of school costs to the expenditures of all governmental units, but also with reference to the percent which school expenditures were of state and local government costs. This percent was 27.6 in 1926, 26.7 in 1928, 26.3 in 1930, 25.0 in 1932, 22.4 in 1934, and 22.8 in 1935.[7] While the increased governmental activity which came with the depression has been a primary factor in swelling governmental costs in recent years, the above figures indicate that during several years prior to 1929 the schools failed to keep pace with the expansion of other public functions. This tendency, already noticeable in predepression years, was especially marked in the years from 1930 to 1935.

Table 1 shows that between 1930 and 1935 net governmental expenditures increased 24 percent. It must not be supposed that this increase in the total cost of government was spread evenly over the expenditures of all governmental units or the expenditures for all governmental functions. Federal government costs increased 124 percent during the same period, while the combined net expenditures of state and local governments declined. State expenditures were reduced by almost 6 percent, and the expenditures of local governments, the principal source of school support, by more than 15 percent. In the meantime, the loss in school expenditures was even greater than the reduction in the total cost of local government. In contrast to this decline, the combined expenditures of all governmental units for all purposes other than elementary and secondary schools increased more than 30 percent. Expansions of federal activity were principally in the fields of public works and public welfare. State governments also devoted an increased share of their funds to these purposes.[8]

[7] National Industrial Conference Board. *Cost of Government in the United States, 1934-1936.* New York: the Board, 1937. p. 5.

[8] National Education Association, Research Division. "Financing Public Education." *Research Bulletin* 15: 25; January 1937.

FIGURE IV

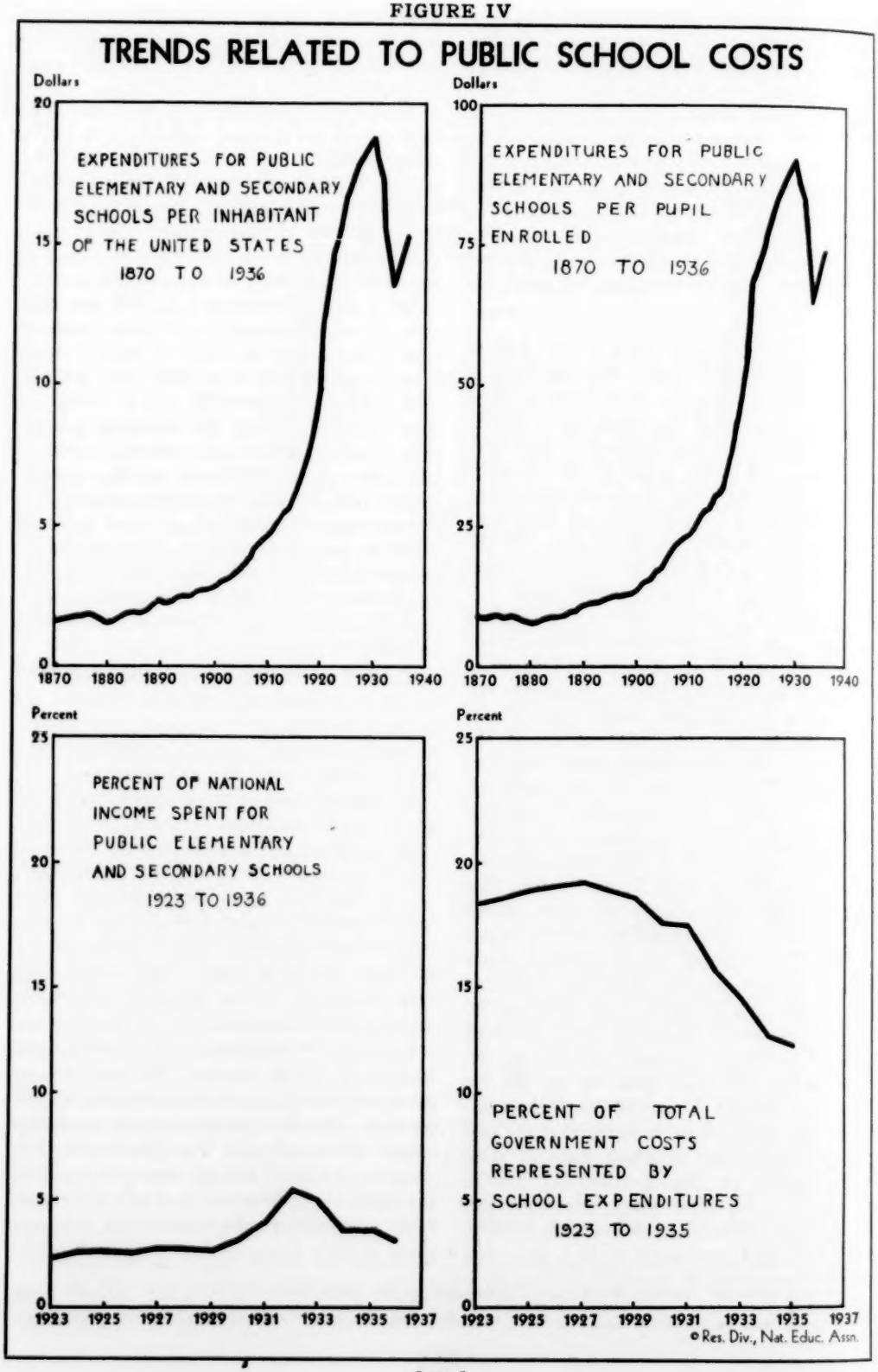

TRENDS RELATED TO PUBLIC SCHOOL COSTS
Dollars
EXPENDITURES FOR PUBLIC ELEMENTARY AND SECONDARY SCHOOLS PER INHABITANT OF THE UNITED STATES 1870 TO 1936
20
15
10
5
0
1870 1880 1890 1900 1910 1920 1930 1940
Dollars
EXPENDITURES FOR PUBLIC ELEMENTARY AND SECONDARY SCHOOLS PER PUPIL ENROLLED 1870 TO 1936
100
75
50
25
0
1870 1880 1890 1900 1910 1920 1930 1940
Percent
PERCENT OF NATIONAL INCOME SPENT FOR PUBLIC ELEMENTARY AND SECONDARY SCHOOLS 1923 TO 1936
25
20
15
10
5
0
1923 1925 1927 1929 1931 1933 1935 1937
Percent
PERCENT OF TOTAL GOVERNMENT COSTS REPRESENTED BY SCHOOL EXPENDITURES 1923 TO 1935
25
20
15
10
5
0
1923 1925 1927 1929 1931 1933 1935 1937
© Res. Div., Nat. Educ. Assn.

Figure IV shows graphically the trends of the relative change in (1) the amount of school expenditures per inhabitant of the United States; (2) the amount of school expenditures per enrolled pupil; (3) the percent of national income spent for schools; and (4) the percent which school expenditures were of federal, state, and local government expenditures.

II. The School Budget, 1914 and 1930

In the preceding section of this bulletin it was stated that the first step in the study of any increase in the expenses of an individual or family was to determine the full amount of this increase and when it took place. As a first step, therefore, in an analysis of the rise in the cost of schools, the upward trend of school expenditures since 1870 was examined, in line with the suggestion that increased school costs can be accounted for on much the same bases as an increase in individual or family living expenses.

The second step to be taken in any study of rising expenditures—whether of an individual or a family, or of some public institution like the schools—is to determine in what specific items of expenditure the increase has occurred. This involves a comparison of two separate expenditure budgets—one for the year at the beginning of the period under study, and one for the final year of that period.

Selection of Period for Special Study

Information is not available in detail concerning school expenditures in 1870. Not until the school year 1914 is the analysis of expenditures, reported by the federal Office of Education, sufficiently detailed to lend itself to an item-by-item comparison with the school budget of some recent year. Also, 1914 is the earliest year for which figures on certain other related or comparative trends can be obtained. It seems desirable, therefore, after having presented in the preceding section data on the long-time trend of school expenditures from 1870, to limit this analysis to a shorter period. Not so much will be lost by this limitation as would be the case if the rise in school expenditures followed a straight line trend. As is shown by Figure I the curve of annual school expenditures from 1870 to 1936 becomes increasingly steep in its ascent as it approaches 1930. The later years of the period, prior to 1930, are those in which the greatest proportionate increase occurred and are, therefore, those best suited to the study of rising costs.

School expenditures were not reported in as great detail in 1914 as they were four years later—for the school year 1918. Because of the desire, however, to extend the analysis of the upward trend in school costs as far back as possible, and because there seemed to be some advantage in linking this analysis with the pre-war era, it was decided to select 1914 as the beginning or base year of this study and to use estimates of the amounts of those items of expenditure for which exact data could not be obtained.

For different reasons the school budget of 1930 was selected for comparison with that of 1914. School expenditures rose to their all-time peak in 1930. In a comparison of the school budgets of 1914 and any other year than 1930, a part of this rise would be concealed. In order that the full extent of the rise in school costs may be given due consideration, therefore, the period 1914 to 1930 was selected for special scrutiny. Brief attention, however, will be given later, in Part VI, to the trend of school costs between 1930 and 1936.

We have seen in the preceding section of this bulletin that there was an increase in the annual expenditures for public schools between 1914 and 1930 of about 1,762 million dollars, or over 315 percent. Let us look, now, at the 1914 and 1930 school budgets with a view to finding out whether or not some budgetary items in a greater degree than others have been responsible for this increase.

The 1914 School Budget

The funds required for the support of public schools are used to purchase a wide variety of goods and services. Table 2 lists these goods and services with the amount and percent of

TABLE 2.—DISTRIBUTION OF SCHOOL EXPENDITURES, 1913-14

Item of expenditure	Amount*	Percent of total
1	2	3
1. Salaries and wages	$373,069,332	67.21
2. Construction of school buildings	69,538,464	12.53
3. School building sites	10,992,775	1.98
4. School building equipment	11,075,221	1.99
5. Operation of plant	33,472,370	6.03
6. Maintenance of plant	15,853,968	2.86
7. Textbooks	3,514,786	0.63
8. Instructional supplies	8,363,505	1.51
9. Interest and fixed charges	18,742,811	3.38
10. Transportation of pupils	7,004,423	1.26
11. Auxiliary agencies other than transportation	3,449,491	0.62
Total	$555,077,146	100.00

* For sources and methods used in obtaining the figures of this table, see Appendix of this bulletin.

total school expenditures devoted to each in 1914. The figures presented in Table 2 are based for the most part upon those contained in the *Report of the United States Commissioner of Education for 1916*,[1] but a comparison of this table with its source will reveal some differences. These are due principally to a reclassification of the original data, so as to group together the payments for the services of all classes of school personnel under the general head of "salaries and wages." Such a reclassification was needed in order to facilitate the study of the causes of increasing expenditures, since there is evidence that trends of the various types of payments for wages and salaries tend to parallel each other more closely than they parallel the trends of other school expenditures, and that their movement is, at least in part, in response to the same general causes.[2] Effecting this reclassification of expenditures involved the use of some estimates. A full explanation of the sources and methods used in obtaining the figures of Table 2 will be found in the Appendix of this bulletin.

Salaries and wages with an estimated total of about 373 million dollars represented over 67 percent of the total school budget in 1914. There are included in this item payments for the salaries of teachers, principals, supervisors, and superintendents, and the estimated amounts paid for the services of administrative and business employees, janitors and engineers, librarians, attendance officers, doctors and nurses engaged in school health work, drivers of school buses, and all other employees of boards of education.

The second largest item of the 1914 school budget is for the construction of school buildings. This includes the cost of construction of new buildings and of additions and improvements to old buildings which are not in the nature of repairs. It is estimated that 69.5 million dollars was spent for this item in 1914.

The estimated expenditures, of slightly under 11 million dollars for the purchase of school sites and of slightly over 11 million dollars for school building equipment, each accounts for just under 2 percent of the total 1914 school budget, thus making a total expenditure for capital outlays in 1914 of over 91.5 million dollars, or 16.5 percent of total school expenditures. We see, then, that only two main items of expenditure, salaries and wages, and capital outlays were responsible for almost 84 percent of the total school budget. Items of the 1914 school budget which were of less importance from a financial standpoint were textbooks and supplies, fuel and light for operating the school plant, the maintenance of the school plant, rent, insurance and other fixed charges, and such items as the transportation of school children, school libraries, school cafeterias, and supplies needed in connection with school health services.

How does the distribution of school expenditures in 1914 compare with that for 1930?

The 1930 School Budget

The facts concerning 1930 school expenditures are presented in Table 3. Total payments for salaries and wages, according to the figures of this table, had risen by 1930 from about 373 million dollars[3] to almost 1.5 billion dollars. Expenditures for total capital outlays had increased from approximately 91.5 million in 1914 to more than 370 million dollars in 1930. Yet each of these items represented a smaller proportion of the total school budget in 1930 than in 1914. Salary and wage payments constituted 64.44 percent of the total budget in 1930, as compared with 67.21 percent in 1914. The proportion of total expenditures devoted

TABLE 3.—DISTRIBUTION OF SCHOOL EXPENDITURES, 1929-30

Item of expenditure	Amount[a]	Percent of total
1	2	3
1. Salaries and wages	$1,492,989,923	64.44
2. Construction of school buildings	261,098,090	11.27
3. School building sites	44,505,356	1.92
4. School building equipment	65,274,523	2.82
5. Operation of plant	99,436,534	4.30
6. Maintenance of plant	78,810,238	3.40
7. Textbooks	25,150,281	1.08
8. Instructional supplies	42,149,758	1.82
9. Interest and fixed charges	142,805,560	6.16
10. Transportation of pupils	48,464,446	2.10
11. Auxiliary agencies other than transportation	16,105,675	0.69
Total	$2,316,790,384	100.00

[a] Sources and methods used in deriving the figures of this table are described in the Appendix of this bulletin.

[1] Vol. II, "Statistics of State School Systems," p. 34. This report contains figures for the school years 1913-14 and 1914-15.
[2] See discussion on pages 144-45.

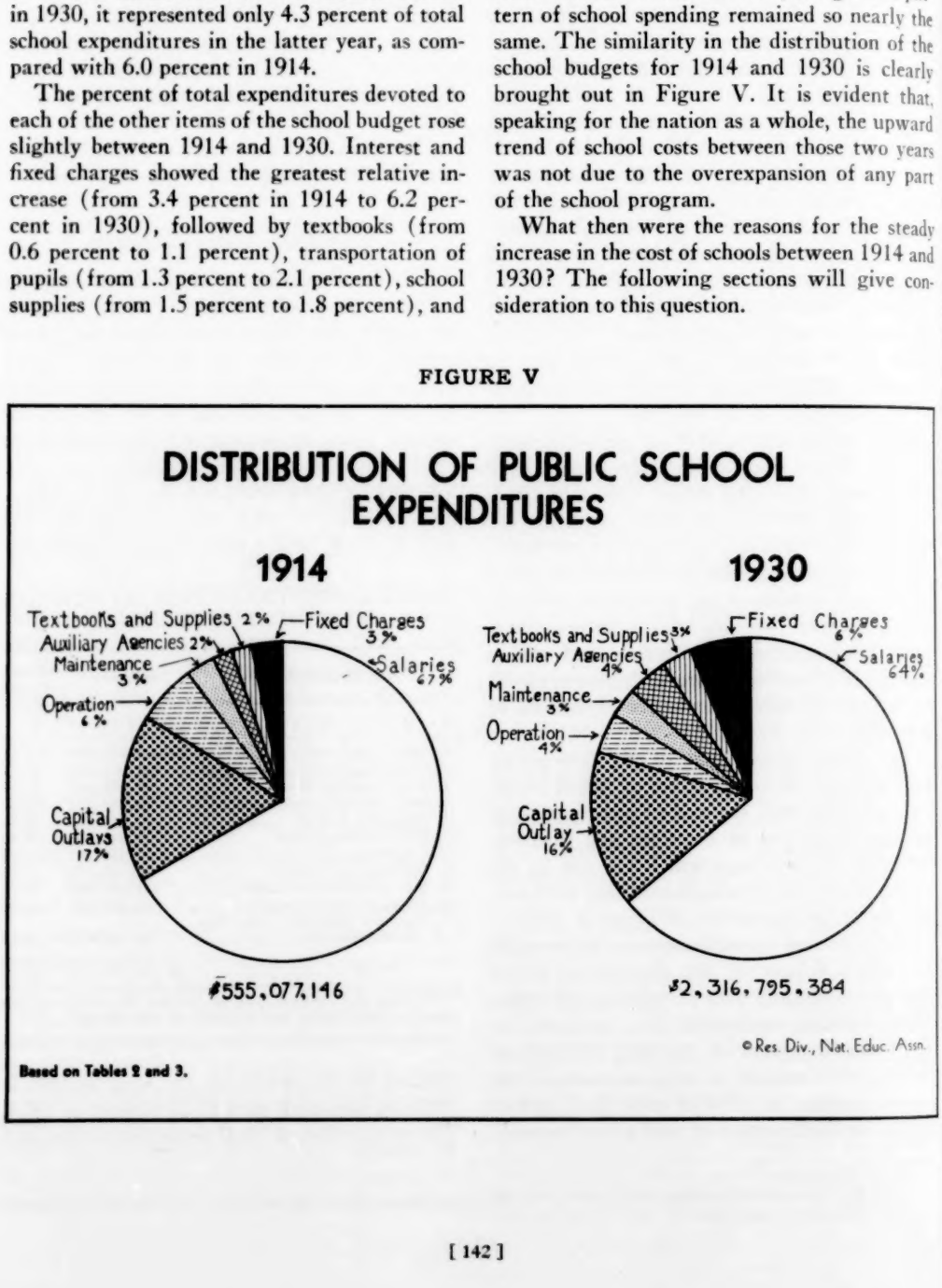
to capital outlays fell slightly from 16.5 percent in 1914 to 16.0 percent in 1930. Another item which declined slightly in its relative importance in the budget was the expense (exclusive of wages to janitors and engineers) of operating the school plant. While the actual amount expended for this item increased from 33 million dollars in 1914 to 99 million dollars in 1930, it represented only 4.3 percent of total school expenditures in the latter year, as compared with 6.0 percent in 1914.

The percent of total expenditures devoted to each of the other items of the school budget rose slightly between 1914 and 1930. Interest and fixed charges showed the greatest relative increase (from 3.4 percent in 1914 to 6.2 percent in 1930), followed by textbooks (from 0.6 percent to 1.1 percent), transportation of pupils (from 1.3 percent to 2.1 percent), school supplies (from 1.5 percent to 1.8 percent), and auxiliary activities, exclusive of transportation (from 0.6 percent to 0.7 percent).

Comparing the two budgets we find that in no item of school expenditure was there a gain or loss in relative importance of as much as 3 percent. It is remarkable that, in spite of the considerable increase in total school expenditures between 1914 and 1930, the general pattern of school spending remained so nearly the same. The similarity in the distribution of the school budgets for 1914 and 1930 is clearly brought out in Figure V. It is evident that, speaking for the nation as a whole, the upward trend of school costs between those two years was not due to the overexpansion of any part of the school program.

What then were the reasons for the steady increase in the cost of schools between 1914 and 1930? The following sections will give consideration to this question.

FIGURE V



III. The Purchasing Power of the School Dollar

A part of the rise in school expenditures is due to the decline in the value of the school dollar. The school expenditure dollar, like the living expenditure dollar of any individual or family, is constantly changing in value—that is in its ability to purchase goods and services.[1] With the schools, just as with the average individual, it is not the number of dollars contained in the annual income that counts most but the amount of goods and services that can be purchased with each of these dollars. When the general price level is high, the buying power of the dollar is correspondingly low and the individual must pay more for the goods and services which make up his standard of living. Either he must increase his expenditures in those years or lower his living standards. Similarly, it is necessary in some years to spend a larger sum than in other years for the goods and services needed for the operation of the public schools. If this larger sum is not forthcoming, standards of education will suffer. It is necessary to keep this fact in mind in studying school costs. Whenever school expenditures for two separate years are compared, the effect of the changing price level should be taken into account.

While both the school dollar and the general living expenditure dollar are constantly fluctuating in value, they do not necessarily change in the same degree, or even in the same direction at the same time. Conceivably in any year, the school dollar may rise while the cost of living dollar declines, or it may lose value while the cost of living dollar gains in value. The possibility of such a divergence in trend between these two "dollars" becomes evident when the items which make up the school and family budgets are examined.

An index of living costs, or of the purchasing power of the general living expenditure dollar, is compiled periodically by the Bureau of Labor Statistics of the United States Department of Labor on the basis of information collected from 32 representative cities concerning the prices of a list of commodities contained in the family budget of the typical workingman as revealed by a comprehensive survey conducted in 1918-19. The results of this study, to which other data have been added from time to time, indicate that on the average over 50 percent of the expenditures of workingmen's families are devoted to the purchase of food and clothing. On the other hand, the bulk of school expenditures—about two-thirds of the total school budget—consists of payments for personal services. Since there is no reason to suppose that the trends in the prices of these several budgetary items would parallel each other closely, it is to be expected that the two "dollars" of which they form so large a part would differ from each other considerably in value at any given time, and that the index of the cost of living compiled by the Bureau of Labor Statistics would be an imperfect measure of changes in the cost of schools. Hence, it is desirable to use some other means of measuring the effect of changes in the purchasing value of the dollar on the trend of school expenditures between 1914 and 1930.

We already know that expenditures for the public schools were 1,762 million dollars higher in 1930 than in 1914. The question then is, How much of this increase in expenditures is directly attributable to a decline in the purchasing power of the school dollar? In order to answer this question it is necessary to eliminate from our calculations, at least temporarily, the effect of all other factors which might tend to produce higher school costs such as, for instance, greater school enrolments, better trained teachers, an expanded curriculum. This can be done by basing all measurements of changing costs upon the cost of the school program in any single selected year and calculating what *that same program* would have cost in other years, thus automatically ruling out the effect on school expenditures of any expansions or improvements in school services. The percent of change in the cost of the same school program between any two years would then represent the percent of change in actual school expenditures, between those two years, which was caused solely by the fluctuating value of the dollar. On this basis, that part of the increase in school expenditures between 1914 and 1930, which was due to the decline in the buying power of the school dollar, is equal to the difference between the actual expenditure for the 1930 school program and the amount which

[1] As explained in the Introduction, this bulletin uses the depreciation of the school expenditure dollar rather than that of the living expenditure dollar used in earlier issues of the *Research Bulletin*.

that same program would have cost in 1914, or, in other words, the difference between the actual expenditure for the 1930 school program and the expenditure for schools, which would have been necessary in that year, if the value of the school dollar had not changed between 1914 and 1930 but had remained at its 1914 level. Before this amount can be determined, the total of school expenditures must be broken down into separate items, or groups of items, and the increase in the cost of each, between 1914 and 1930, which was due to the decline in the purchasing power of the dollar, must be calculated separately.

Changing Cost of Budgetary Items

Tables 2 and 3 in this bulletin present such an analysis of the school budget for the years 1914 and 1930. Expenditures for 11 items, or groups of items, are listed in these tables. The following paragraphs give separate consideration to the amount by which the actual 1930 expenditure for each of these items exceeded that which would have been necessary if the value of the dollar had been as great in 1930 as in 1914. The reader who does not wish to follow the details of this analysis may turn directly to page 153 where the discussion is summarized.

Salaries and Wages

The total amount of salaries and wages[2] paid to all classes of school employees in 1914 was approximately 373 million dollars, or over 67 percent of total school expenditures in that year. By 1930 payments to school employees had risen to more than 1,492 million dollars. In order to determine what part of the increase of 1,119 million dollars was due directly to a decline in the buying power of the dollar, the amount which the schools would have had to pay in 1914 for the services of a like number of persons equal in training, experience, and ability to those employed in 1930 must first be calculated. There is a special difficulty involved in the determination of this amount.

In the first place, it seems fairly obvious that total annual payments for the salaries of teachers, the largest group of school employees, increased between 1914 and 1930 in response to (1) an increase in the number of teachers; (2) an increase in the number of days in the school year during which teachers were required to render service; (3) an improvement in teacher qualifications; and (4) the decrease in the value of the dollar. The influence of three of these factors on the trend of teachers' salary payments must be eliminated before the effect of the fourth can be measured. In the case of the first two factors this is easy to do. By determining the trend of the average salary paid teachers for one week of service in each of the years 1914 thru 1930, the effects of the greater number of teachers and the increasing length of the school year on the total annual payments for teachers' salaries are ruled out automatically. The third of the above-listed factors—improved teacher qualifications—presents a more difficult problem.

It is a relatively simple matter to ascertain, for any given year, the average price of a thousand feet of lumber or a carload of cement, and the changes in the prices of these same commodities over a period of time. The unit upon which price measurements are based —1000 feet of lumber or 1 carload of cement —does not change from year to year. In the realm of personal services, however, the situation is distinctly different. For instance, the federal Office of Education makes available statistics on the average annual salary paid teachers[3] in each alternate year. According to these statistics the average price of the services of one teacher was $525 in 1914 and $1420 in 1930. Reduced to a weekly salary basis these amounts become $16.55 in 1914 and $41.10 in 1930, but the services of one teacher for one week were not the same in 1930 as in 1914. Therefore, they do not provide a satisfactory unit upon which to base measurements of the rise and fall of prices. These services were constantly changing during the period 1914 to 1930, because the average teacher who performed these services was constantly changing. Before that part of the rise in teachers' salaries between 1914 and 1930, which was caused solely by the decreased value of the dollar, can be calculated, it is necessary to know not how much was actually paid weekly for the services of one teacher in each of those years, but *how much would have been paid in 1914 for one week's services of the typical 1930 teacher.*

[2] For a description of this item see page 141.

[3] These figures are averages of the salaries paid all teachers, principals, and supervisors. See: U. S. Department of the Interior, Office of Education, *Biennial Survey of Education, 1928-30*, "Statistics of State School Systems," p. 40; and *Annual Report of the Commissioner of Education, 1916*, Vol. II, p. 30. (Washington, D. C.: Government Printing Office.)

The price which the services of the typical teacher of 1930 would have brought in any earlier year of the 1914-30 period cannot be determined with exactness for the nation as a whole for the simple reason that this teacher did not exist—at least as a statistically ascertainable unit—in any year prior to 1930. Similarly the typical teacher of 1914 did not exist after the close of that year. She was supplanted in the next year by the typical teacher of 1915—a somewhat different individual. The typical 1930 teacher who received an average weekly salary of $41 was a very different person from the typical teacher of 1914. The 1930 teacher was better educated and had received a more specialized training. Similarly, figures on the average weekly wages and salaries of many other groups of school employees in 1914 and 1930, if they were available on a nationwide basis, would not represent comparable payments in the two years for the same quality of services. The amounts of such comparable payments would be difficult, if not impossible, to obtain for most of these groups.

If the changes in the payments which the schools would have had to make in other years for the services of their 1930 personnel cannot be determined exactly, they can at least be measured approximately. W. Randolph Burgess, in a study of school cost trends between 1840 and 1920,[4] compared the trend of the average weekly salary of teachers with those of the weekly wages of artisans and unskilled laborers for the same period and found a close resemblance between them, altho teachers' salaries started lower and gained ground steadily in relation to laborers' wages until the last five years of the period. After 1915 the wages of labor rose sharply while teachers' salaries lagged behind for a year or two before they, in their turn, entered upon a steep ascent. The trend of teachers' salaries was also compared with the trend of the cost of living but no direct causal relationship was discovered between these two series.

Burgess interpreted his findings as evidence that (1) salaries and wages of all occupational groups tend to follow similar trends because they are all built upon the value of what the least competent worker is able to produce; (2) any amount received by an individual in return for his services, which is in excess of the wage paid to the least competent worker, is extra compensation for a higher level of ability; and (3) the progress which teachers made between 1840 and 1920 in raising their salaries in relation to the compensation of other groups of workers was based upon the "increased ability which comes from increased training."

Figure VI bears out Burgess' conclusions. The resemblance between the two curves shown here is evident, altho after 1915 they parallel each other somewhat less closely. In these later years of the period the trend of teachers' salaries rises higher, and develops a lag of two or three years in comparison with the trend of the weekly wages of unskilled labor. It fails to reflect the depression of 1921-22. It is probable that the relatively greater rise in the curve of teachers' salaries is due to the notable improvement in teacher qualifications which has taken place since the close of the World War. This is in line with Burgess' suggestion in the study cited above. The greater stability of the teachers' salary curve and the lag which it reveals in comparison with the trend of wages of unskilled laborers may be explained by the fact that teachers' salaries are in the nature of public expenditures, and public expenditures, as a whole, are less sensitive to economic conditions than are most private payments for goods and services.

From the argument of the two preceding paragraphs it follows logically that if there had been no change at all in teacher qualifications between 1914 and 1930, the trend of the average weekly salary of teachers in those years would have been approximately the same as the trend of the average weekly wages paid to unskilled labor. In other words the change between any two years of this period in the price which the schools would have had to pay for the services of the 1930 teacher would have approximately equaled the change in the price paid for the services of unskilled labor.[5]

At first thought it might appear that the lag noticed in the trend of teachers' salaries in Figure VI, as compared with the trend of the

[4] Burgess, W. Randolph. *The Trend of School Costs.* New York: Russell Sage Foundation, 1920. 142 p.

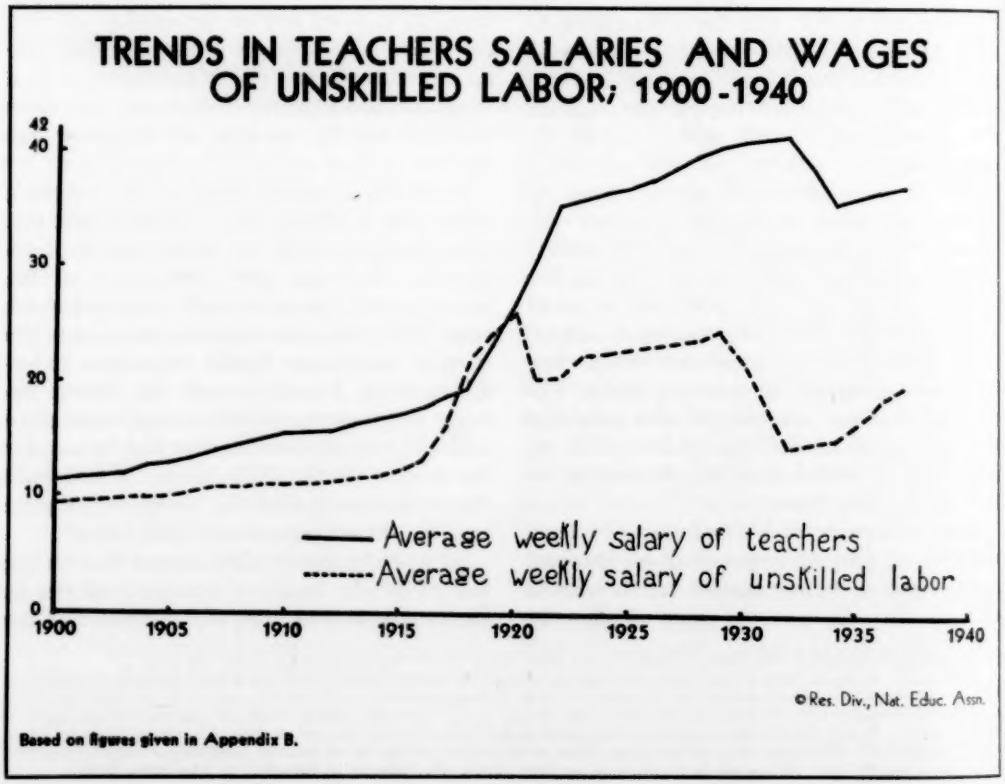
[5] There are, of course, some factors, other than the improvement of teacher qualifications, which tend to produce a difference between the trends of teachers' salaries and of wages of labor. It is impossible to take specific account of all these factors in this bulletin. Probably most of them are related in some degree to the causes of increase in school expenditures considered in Parts IV and V. At any rate the effect of these factors should be excluded from any measure of changes in teachers' salaries which are due solely to the fluctuating value of the dollar. There seems good reason to believe that the trend of the wages of unskilled labor closely approximates what would be the trend of teachers' salaries after eliminating the effect of these other factors.

wages of unskilled labor, would affect the reliability of the wage index as a measure of relative teachers' salary costs, but further consideration suggests that this difficulty is more imaginary than real. The lag revealed in the teachers' salary curve in Figure VI was in the trend of weekly salaries *actually paid* to teachers. In a period when wages and salaries of other occupational groups are rising, schoolboards often delay in providing for proportionate increases in teachers' salaries, but the fact that the actual salaries paid do not change does not mean that there is no change in the purchasing power of the dollar used for the payment of these salaries. In such times, teachers are likely to leave the profession for work in other more highly remunerative fields so that the salary paid teachers no longer attracts the same quality of service, the cost of the same instructional services becomes higher, and conversely the purchasing power of the dollar used to buy these services becomes lower, as salaries and wages in other occupational fields rise. This situation was particularly evident in the years at the end of, and immediately following, the World War, when the more attractive salaries offered in other fields resulted in an acute shortage of well-qualified teachers.[6] When wages and salaries paid most occupational groups are declining and positions are scarce, schoolboards, if they do not reduce salaries, are able to take advantage of a wider selection of available teacher personnel. Standards of teaching service may be raised by a more careful selection of teachers, and, as a result, the purchasing power of the teachers' salary dollar may be increased without actually reducing the salaries paid. These were the conditions which operated in some rural areas during the depression years to raise the standard of teacher qualifications.

The index of wages of unskilled labor probably serves as well, or better, to measure the effect of changes in the purchasing power of the dollar upon wages and salaries paid to other

[6] Evenden, E. S. *Teachers' Salaries and Salary Schedules in the United States, 1918-19.* Commission on the Emergency in Education. Commission Series, No. 6. Washington, D. C.: National Education Association, 1919. p. 3-5.

FIGURE VI



Based on figures given in Appendix B.

groups of school employees outside the teaching service. Several such indexes are available[7]—none of which covers all of the years between 1914 and 1930. That compiled by Paul H. Douglas, however, extends from 1890 thru 1926 and thus provides a figure for each year between 1914 and 1930, except the last four. Douglas' index is based upon figures for average weekly wages of unskilled labor compiled by Ralph G. Harlin for the years 1890 thru 1920, and by the National Industrial Conference Board for the years 1920 thru 1926. These two series were spliced together by applying the indexes of the later series to the 1920 index of the earlier series. The National Industrial Conference Board figures, which are now available for the years 1920 thru 1936, are used in this bulletin to extend the series of index numbers brought together by Douglas, thru 1930.[8]

The index numbers thus obtained for the years 1914 thru 1930 are included in Table 4, column 2, as a measure of the change in the power of the dollar to purchase the services of school employees. The index for 1930 shows that the cost of a given amount and quality of the services of school employees was 86 percent higher in that year than in 1914. In other words, $1.00 would have gone as far in 1914 as did $1.86 in 1930, toward paying for the services of the 1930 staff of school employees, and the same services for which the schools paid 1,492 million dollars in 1930 could have been obtained in 1914 with a payment of a little more than 802 million dollars in 1914. The difference between these two sums is 691 million dollars. This amount, or approximately 62 percent of the total gain of 1,119 million dollars in the salaries and wages of school employees, between 1914 and 1930, was caused by a declining school dollar.

Textbooks

The amount paid for teachers' salaries constitutes the great part of the cost of instruction in the public schools, but teachers are also supplied with certain materials to aid them in the

[7] Beney, M. Ada. *Wages, Hours and Employment in the United States 1914-1936.* New York: National Industrial Conference Board, 1936. p. 52-55 ¶ Burgess, W. Randolph. "Index Numbers for the Wages of Common Labor." *Journal of the American Statistical Association,* June 1922. p. 101-103. ¶ Douglas, Paul H. *Real Wages in the United States.* Boston: Houghton Mifflin Co., 1930. p. 177. ¶ Hurlin, Ralph G. Quoted by Douglas in *Real Wages in the United States,* p. 175. ¶ Coombs, Whitney. *The Wages of Unskilled Labor in the Manufacturing Industries in the United States.* New York: Columbia University Press, 1926. 162 p.

[8] The basic series and computations used in obtaining these indexes are set forth in the Appendix of this bulletin.

TABLE 4.—INDEX OF EDUCATION COSTS AND OF THE PURCHASING POWER OF THE SCHOOL EXPENDITURE DOLLAR, 1914 to 1930[a]
(1914 = 100.0)

Year	Salaries and wages	Text-books	Sup-plies	School build-ings	School grounds	Equip-ment	Opera-tion	Main-tenance	Interest and fixed charges	Trans-porta-tion	Health, libraries, and other auxiliary activities	Total combined index of public school costs	Index of the purchasing power of the school dollar
	Wt. 59.14[b]	Wt. 1.13[b]	Wt. 2.11[b]	Wt. 9.45[b]	Wt. 3.28[b]	Wt. 2.68[b]	Wt. 4.05[b]	Wt. 2.85[b]	Wt. 10.53[b]	Wt. 4.09[b]	Wt. 0.69[b]		
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1914	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	$1.00
1915	103.7	100.0	99.0	101.3	100.0	104.7	100.4	101.3	100.0	91.7	101.4	102.1	.98
1916	113.6	100.0	140.6	119.7	100.0	116.7	104.2	119.7	100.0	107.1	106.3	112.3	.89
1917	136.5	100.8	162.1	147.1	100.0	136.5	116.0	147.1	100.0	116.3	119.7	131.1	.76
1918	187.0	107.0	175.6	164.1	100.0	175.3	135.0	164.1	100.0	125.9	138.6	165.8	.60
1919	206.3	122.6	197.9	191.3	100.0	220.8	146.2	191.3	100.0	132.3	155.5	183.2	.55
1920	221.4	153.2	279.2	250.9	100.0	271.0	171.5	250.9	100.0	151.5	181.2	204.9	.49
1921	172.3	165.8	173.6	187.8	100.0	228.2	182.9	187.8	100.0	131.2	174.1	164.4	.61
1922	172.5	160.7	155.2	183.4	100.0	193.5	181.6	183.4	100.0	112.6	167.2	161.8	.62
1923	189.3	159.1	171.8	204.2	100.0	207.8	184.7	204.2	100.0	101.5	167.6	174.7	.57
1924	190.4	160.3	157.6	202.1	100.0	204.3	182.5	202.1	100.0	96.7	170.0	174.4	.57
1925	194.8	162.0	175.5	204.3	100.0	200.2	185.3	204.3	100.0	99.7	172.6	167.9	.60
1926	197.2	164.0	167.8	207.5	100.0	195.7	188.2	207.5	100.0	100.9	175.4	179.6	.56
1927	200.0	165.8	158.2	204.0	100.0	191.0	185.3	204.0	100.0	92.8	174.6	180.0	.56
1928	203.0	163.8	154.6	203.8	100.0	186.3	182.1	203.8	100.0	91.9	173.7	181.9	.55
1929	207.3	163.2	152.5	206.5	100.0	184.1	180.9	206.5	100.0	93.4	174.6	184.2	.54
1930	186.1	164.8	148.3	203.6	100.0	179.4	179.0	203.6	100.0	87.3	173.2	170.7	.59

[a] Sources and methods used in arriving at the figures of this table are described in the Appendix.
[b] The weights used in this table are based upon the percentage distribution of the cost of the 1930 school program in 1914.

classroom. Important among these educational supplies are textbooks. While not all schools, even now, furnish textbooks to pupils free of charge, the expenditure for free textbooks rose from 3.5 million dollars in 1914 to over 25 million dollars in 1930. A part of this rise in expenditures was due not to the increase in the number of schools providing free textbooks but to the increased cost of the textbooks themselves. To determine the amount of this cost, the Research Division of the National Education Association obtained prices of standard textbooks from three school publishing companies. The figures furnished by each company will be found in the Appendix of this bulletin.

Each of the publishing companies was requested to list, for each year between 1914 and 1930, the prices of one first-year reader, one third- and fourth-grade arithmetic, one junior high-school science, one high-school history (American), and the first volume of one two-volume speller. As far as possible each publisher selected his "best-seller" in each of the curriculum fields and listed prices of this same book thruout the 1914-30 period, but when one book dropped out of use, it was considered permissible to substitute another in the same field. Since there is no way of determining the relative importance of the various books for which prices were quoted in total textbook sales to schools thruout the nation, simple averages have been taken of the listed prices and index numbers constructed on the basis of these averages with the average price in 1914 equal to 100. This series of index numbers is shown in column 3 of Table 4.

School textbook prices in general, on the basis of this index, were almost 65 percent higher in 1930 than in 1914. In other words, each dollar's worth of 1930 textbooks could have been purchased for only 61 cents in 1914. Applying this index to the 1930 expenditure for free textbooks, it is discovered that the cost of the textbooks purchased for 25 million dollars in 1930 would have been only 15 million dollars in 1914. The difference of almost 10 million dollars between this amount and that actually spent in 1930 represents that part of the increased expenditure for school textbooks between 1914 and 1930, which was due to the lower value of the school dollar.

Instructional Supplies

In 1914 slightly more than 8.36 million dollars was spent by the schools for instructional supplies other than textbooks. This expenditure had risen by 1930 to over 42 million dollars. In order to ascertain what part of this increased expenditure was caused by higher prices, or by the decrease in the value of the dollar used to purchase school supplies, it is necessary to determine yearly changes in the price of the supplies purchased in 1930. Unfortunately, information is not available on the amounts and kinds of school supplies purchased in 1930. The only comprehensive study which provides the information needed for any year is one by Anderson, Fowlkes, and Jones[9] for 1927. The calculations in this bulletin of changes in the cost of school supplies between 1914 and 1930 are, therefore, necessarily based upon the assumption that the same items were contained in the school supply budget of 1930 as in that of 1927 as shown by the Anderson, Fowlkes, and Jones study, and that the relation which the expenditure for each item bore to the total expenditure for school supplies was the same in both years. The study by Anderson, Fowlkes, and Jones lists, for each school grade, articles of school supplies purchased in 43 cities, their quantities, unit costs, and costs per pupil in average daily attendance. Some 150 or more school supply items are included. To determine unit price changes for each of these items for each year between 1914 and 1930 would be impracticable. By a process of selection and classification, however, it is possible to compile a much shorter list of school supply items, or group of items, which are responsible for so great a proportion of all school supply expenditures as to control very largely, thru their price changes, the general movement of school supply prices from year to year. Such a list is shown below. The eleven items which are included in this list account for over 88 percent of the average per pupil cost of all school supplies in all school grades according to the Anderson, Fowlkes, and Jones study. An index of changes in the combined prices of these eleven items can probably be taken as also indicative of changes in school supply prices in general. The percent which each of these items represents of the

[9] Anderson, C. J.; Fowlkes, John Guy; and Jones, L. F. *Study of Budgeting and Allotment of School Supplies.* Madison, Wis.: University of Wisconsin, 1929. 43 p.

total expenditure for all eleven items is given on the right.

Item	*Percent of total expenditures for eleven items*
1. Paper	63.38
2. Cotton goods	3.14
3. Paint	11.02
4. Lumber	2.19
5. Linoleum	2.82
6. Pencils	3.64
7. Chalk	1.91
8. Blackboard erasers	1.24
9. Pens	1.13
10. Scissors	4.69
11. Wax crayons	4.84
	100.00

The next step is to determine the movement of the prices of these eleven school supply items between 1914 and 1930. This information is available from two sources. In the first place, items 1 thru 4 listed above represent broad classes of school supplies which include many individual items. For instance, under the head of item 1 are included 43 different types and sizes of paper used in the schools. It seems reasonable to suppose that relative changes from year to year in the combined prices of these kinds of paper would correspond approximately with the index of wholesale prices of paper compiled by the Bureau of Labor Statistics of the United States Department of Labor. This index has been used to measure changes in prices of paper used as school supplies in connection with the construction of the general index of changes in the cost of school supplies shown in column 4 of Table 4. In the same way the Bureau of Labor Statistics' index of the wholesale prices of cotton goods has been used to measure changes in the prices of school supplies made of cotton cloth. Indexes of the wholesale prices of lumber, paint, and paint materials compiled by the Bureau of Labor Statistics have also been used to indicate changes in unit costs of paint and lumber used in connection with instruction in the schools.

Indexes of wholesale prices compiled by the Bureau of Labor Statistics are not available for the other seven items of school supplies listed above. These unit prices for each year (1914 to 1930) have been obtained directly from various school supply houses. The basic figures on prices of individual school supply items as reported to the Research Division of the National Education Association and the indexes of changes in prices built thereon, together with the indexes of wholesale prices of paper, cotton goods, paint, and lumber mentioned above, are shown in the Appendix.

The eleven series of index numbers thus obtained are combined into a series of weighted index numbers of school supply prices by multiplying them by the corresponding percentage figures listed above. This series of weighted index numbers is shown in column 4 of Table 4. They show that on the whole the cost of the same amount and kinds of instructional supplies purchased by the schools in any one year increased 179 percent between 1914 and 1920, but that by 1930 it had fallen to a level slightly more than 48 percent above that of 1914. On this basis the same instructional supplies purchased for 42 million dollars in 1930 would have cost about 28 million dollars in 1914. This represents an increase of something less than 14 million dollars, or approximately 42 percent of the total increase of over 33 million dollars, which was due to increased prices, or the decline in buying power of the dollar used to purchase school supplies.

Construction of School Buildings

Expenditures for the erection of new school buildings were over 261 million dollars in 1930 as compared with less than 70 million dollars in 1914. This was an increase of over 191 million dollars, or 378 percent.

The cost of new buildings varies from year to year in direct accordance with changes in the prices of materials and labor that go into their construction. A composite index of wholesale prices of materials used in non-residential buildings is compiled for each year by the Bureau of Labor Statistics of the United States Department of Labor. Principally these materials include brick and tile, cement, lumber, paint and paint materials, plumbing and heating equipment, and structural steel. The Bureau of Labor Statistics also publishes indexes of the wage rates of union labor employed in the building trades. When these two series of indexes are weighted by 64.3 percent and 35.7 percent, respectively—that is, in proportion to the relative importance of materials and labor in the total cost of non-residential building construction[10]—and combined, the result is the

[10] United States Department of Labor, Bureau of Labor Statistics. *Handbook of Labor Statistics*. 1936 edition. Bulletin No. 616. Washington, D. C.: Government Printing Office, 1936. p. 221.

series of indexes contained in Table 4, column 5. Strictly speaking, this series measures changes in the cost of all non-residential building construction rather than the cost of construction of school buildings. While school building costs may not have varied in the years 1914 to 1930 precisely as did the cost of non-residential building in general, there is no reason to suppose any wide divergence between these two trends. It is probable, therefore, that the indexes of column 3 form a fairly accurate measure of changes in school building costs.

Applying the index for the purchasing power of the dollar in the year 1930 to the actual 1930 expenditure for the construction of school buildings, as shown in Table 3, we find that the comparative cost of the same buildings in 1914 would have been about 128 million dollars—less than half the amount of their 1930 cost. On this basis over two-thirds of the total increase in expenditures for school building construction between 1914 and 1930 was due to a decrease in the power of the dollar to purchase building materials and labor. According to these indexes, school building prices more than doubled between 1914 and 1930, and the power of the dollar to buy new school buildings declined to less than 50 cents.

School Building Sites

In 1930 almost 45 million dollars was spent for the purchase of land upon which to erect school buildings. In 1914 expenditures for this purpose totaled less than 11 million dollars. Doubtless the price which schoolboards had to pay per square foot for the acquisition of this land also increased between 1914 and 1930. There does not appear to be, however, any information which will furnish a reliable index of this increase in price. For this reason the indexes of column 6, Table 4, have been held constant at 100 thruout the 1914-30 period. It is common knowledge that land values rose between 1914 and 1930, and that, as a result, the value of the dollar used for the purchase of school sites declined. It should be noted that the necessary omission of a measure of this change in value, from the calculations contained in this bulletin, has the effect of minimizing the influence of changes in the purchasing power of the school dollar in increasing total school expenditures.

School Building Equipment

The permanent equipment of a school building consists very largely of furniture. In 1930, 65 million dollars was spent for this equipment, or 54 million dollars more than in 1914. Comparative prices of the same amount and quality of school furnishings are not available over a period of years for the nation as a whole, nor has it been possible to obtain information as to changes in unit prices of furnishings of non-residential buildings between 1914 and 1930. The Bureau of Labor Statistics, however, compiles an index of the cost of house furnishings on a 1913 base as a part of its general cost of living index. The list of articles priced in connection with this index is given in the Appendix. A glance at this list will show that the index is heavily weighted with furniture prices. While the articles of furniture priced in connection with the house furnishings index are for the most part different from those ordinarily purchased by the schools, it seems probable that the combined prices of articles furnished in the two lists would follow the same general trend. The index of house furnishings compiled by the Bureau of Labor Statistics is, therefore, used in column 7 of Table 4 to measure changes in prices of school equipment between 1914 and 1930.

The figures of Table 4, column 7, indicate that the permanent equipment purchased for the schools in 1930 at 65 million dollars would have cost about 36 million dollars in 1914. This is an increase of almost 25 million dollars. Almost half, then, of the total increase of 54 million dollars in expenditures for school equipment between 1914 and 1930 was the result of the decreased value of the school dollar. The 1914 dollar as related to the purchase of equipment for the public schools was equal to less than 56 cents in 1930.

Operation of School Plants

The expense of operating a school building —that is, keeping it clean, lighted, and warm, and otherwise ready for use—consists principally of (1) payments for the services of engineers and janitors, and (2) the cost of fuel and light. The federal Office of Education, in the "Statistics of State School Systems" contained in their *Biennial Surveys of Education*, reports all operating expense under one or the other of these two heads. As already stated the wages paid janitors and engineers have been

deducted from operating expenses in 1914 and 1930 as shown in Tables 2 and 3, item 5, and included with other salary and wage payments under item 1 in each of these tables.[11] An index of the cost of the services of all public school employees, including the janitorial and engineering staffs, is already included in column 2 of Table 4. The remaining problem, therefore, is to find some measure of changes between 1914 and subsequent years up to 1930 in the cost of the other principal item of operation costs, fuel and light.

Such a measure is available in the index of the cost of fuel and light compiled by the Bureau of Labor Statistics as a part of its general cost of living index and shown in column 8 of Table 4. According to this index it would have cost less than 56 million dollars in 1914 to purchase the same amounts and kinds of fuel and light used in the operation of the schools in 1930. The actual amount paid by the schools for fuel and light in 1930 was 99 million dollars or almost 44 million dollars higher than it would have been if the value of the dollar had remained at its 1914 level. The total increase in school expenditures for fuel and light between 1914 and 1930 was about 66 million dollars. Very nearly two-thirds of this total increase was the inevitable result of the lower buying power of the dollar.

Maintenance of School Plants

This item of school expenditure includes repainting, reroofing, refinishing, and otherwise repairing school property. The goods and services involved in these processes do not differ to any great extent from those involved in new building construction. There is reason to believe, therefore, that the index of the cost of school building construction included in column 5 of Table 4 is also a reliable measure of changes in the cost of maintaining school buildings in good repair. Accordingly, this index is included in Table 4, column 9, as well as in column 5. Since the index number in this series for 1930 is 104 percent higher than that for 1914, and the purchasing power of the dollar was less than half as great, it follows that the schools would have had to pay less than 39 million dollars in 1914 for the same repairs which actually cost about 79 million dollars in 1930. Almost 65 percent of the total increase in expenditure for the maintenance of school plans between 1914 and 1930 was caused by the decline in the buying power of the dollar.

Interest on Indebtedness and Fixed Charges

Tables 2 and 3 show that the sum of interest paid on school indebtedness and certain fixed charges such as rent and insurance rose from nearly 19 million dollars in 1914 to almost 143 million dollars in 1930. This was an increase of approximately 124 million dollars in these expenditures. Because there seems to be no reliable measure of the extent to which the changing value of the dollar was responsible for this increase, the index numbers of Table 4, column 10, have been held constant at 100, the 1914 level of such expenditures.

Indexes of current interest rates on commercial loans are available, it is true, but these do not reflect satisfactorily the movement of the average rate of interest paid yearly thruout the nation on the long-term indebtedness of school districts. Rates of insurance on a school building are affected by conditions prevailing locally, such as the type of the structure itself, its state of repair, the degree to which it is protected against fire hazard, and the characteristics of the community in which it is located. As these circumstances change, rates are revised. School systems may be able to trace the trend of this cost locally, but average figures are not available for the nation as a whole.

Transportation of Pupils

Many school districts provide for the transportation between school and home at public expense of children living more than a stated distance from the nearest school. The expenditure for this purpose in 1930 was over 48 million dollars as compared with an estimated 7 million dollars in 1914. These figures as shown in Tables 3 and 2, respectively, are exclusive of the wages paid to drivers of school buses. As stated in an earlier section of this bulletin, the amount of wages paid bus drivers is included with other salaries and wages under item 1 in Tables 2 and 3. The problem of measuring changes in the remaining cost of pupil transportation then is largely one of determining changes in the cost of the buses in which the children ride and in the cost of operating these buses.

[11] See pages 140 and 141.

A measure of the changing cost of school buses is available in the index of wholesale prices compiled by the Bureau of Labor Statistics. While this index reflects changes in the price of all motor vehicles, it is safe to assume that prices of school buses alone would follow approximately the same trend.

Two separate indexes in combination are used to measure changes in the cost of operating school buses: (1) the index of wholesale prices of tires and tubes compiled by the Bureau of Labor Statistics; and (2) an index of prices of gasoline at filling stations supplied by the American Petroleum Institute for the years 1918 thru 1936 and extended back to 1914 on the basis of the assumption that relative changes in filling station prices between 1914 and 1918 were the same as the relative changes in tank-wagon prices of gasoline in those years.

Based on figures published in a recent study of the cost of automobile operation and the assumption that pupil transportation costs, exclusive of salaries paid bus drivers, are distributed in approximately the same manner as automobile operation costs, in general the relative importance of the following three factors in the total cost of pupil transportation in 1928 was as follows:[12]

School buses	41.6 percent
Tires and tubes	19.2 percent
Gasoline	39.2 percent

When these percentages are used to weight the corresponding series of index numbers described above, the result is the new series of weighted indexes of the cost between 1914 and 1930 of pupil transportation services shown in Table 4, column 11. According to these figures the cost of transporting the same number of pupils over the same number of miles of road in the same number of buses was less in 1930 than in 1914. If the pupil transportation services provided in 1930 at a cost of over 48 million dollars had been available in 1914, they would have cost more than 55 million dollars. Actual expenditures by the schools for the transportation of pupils in 1914 amounted to about 7 million dollars. No part of the increase of over 41 million dollars in expenditures for school buses and their operation, therefore, can be ascribed to the changed buying power of the dollar used to pay for pupil transportation. In fact, if the power of the dollar to purchase transportation services had remained at its 1914 level instead of rising to almost $1.15 in 1930, the schools would have had to pay 7 million dollars more in that year than was actually spent for these services.

Coordinate Activities and Services Other Than Transportation

In addition to providing for the transportation of pupils, the schools engage in certain other activities which are not, strictly speaking, a part of the educational process. They maintain school libraries, take measures to promote better health conditions, and provide lunches for undernourished children. As with pupil transportation, the amounts expended for these purposes as shown in Tables 2 and 3 (item 11) are exclusive of salaries and wages which are included in each table under item 1. The remaining expense for these coordinate activities and services, after deducting salary and wage payments, rose from an estimated 3.5 million dollars to over 16 million dollars in 1918.

Exact information as to the proportionate distribution of the expenditure of over 16 million dollars among the various services provided in 1930 is not available. It is estimated, however, on the basis of more detailed data for later years that at least 1.5 million dollars of the total amount was spent for school libraries, while over 2 million dollars consisted of payments for health services. The remainder of more than 14 million dollars was used to provide school lunches and a wide variety of miscellaneous articles and services. As no factual basis is known for dividing this 14 million dollar total among the various objects of expenditure, it is arbitrarily assumed here that equal parts of this amount were used to provide school lunches, to purchase books for school libraries, and to purchase medical, dental, and optical supplies needed in connection with school health services.

On this basis the distribution of expenditures

[12] Bulletin No. 91 of Iowa State College (by T. R. Agg and H. S. Carter, and quoted by the National Automobile Chamber of Commerce in *Facts and Figures in the Automobile Industry, 1929*, p. 74) shows depreciation and the cost of tires and tubes and gasoline as representing 52 percent of total automobile operation costs. Raising the percentages of the total cost represented by each of these factors so that they will add to 100, the percentages listed on this page are obtained. The first of the above listed items is really "depreciation of school buses." Since depreciation represents a percentage of the purchase price, it is assumed here that the average cost of depreciation per motor vehicle changed in proportion to the change in the average price of motor vehicles.

for auxiliary or coordinate activities and services in 1930 was assumed to be as follows:

Item	*Percent*
School library books	38.4
Food for school lunches	29.4
Health supplies	32.2
	100.0

An index of the combined price trends of these items has been calculated by weighting, in accordance with the above percentages, three separate series of index numbers as follows:

1. For school library books, the index of school textbook prices contained in Table 4, column 3.
2. For food for school lunches, the index of retail prices of food compiled by the Bureau of Labor Statistics.
3. For school health supplies, the index of the cost of miscellaneous items, also compiled by the Bureau of Labor Statistics as a part of its general cost of living index and consisting largely of medical, optical, dental, and other health supplies.

The resulting weighted index of changes in the cost of auxiliary and coordinate activities of the schools is contained in Table 4, column 12. According to the figures of column 12 of Table 4, the same goods and services provided in connection with the auxiliary and coordinate activities of the schools in 1930 would have cost, exclusive of the salary and wage payments involved, about 9 million dollars in 1914. This is almost 7 million dollars less than the actual 1930 expenditure. As already stated, however, the total rise in expenditures for these activities and services between 1914 and 1930 amounted to over 12 million dollars. The decline in purchasing power of the dollar is thus responsible for 58 percent of this increase.

Index of the Total Cost of Schooling

Preceding paragraphs have described the sources and preparation of indexes of the cost of eleven separate parts of the school program corresponding to the eleven items of expenditure in the school budget. These indexes, which cover the period from 1914 to 1930, are presented in columns 2-12 of Table 4. In column 13 of the same table is a series of index numbers which measure yearly changes in the cost of the entire school program.

The figures of column 13 are the weighted averages of the indexes for the same years in columns 2 to 12. The weights applied to these several indexes are shown at the top of the columns. These are not the same proportions of the total school budget as those devoted to these items in either 1914 or 1930. Instead they represent the percents of the total cost of the 1930 school program which would have been required for these separate items if that program had been purchased in 1914. Column 14 of Table 4 contains indexes of the purchasing power of the school dollar for the years 1914 to 1930. These are the reciprocals of the indexes of column 13.

When the reciprocal of the index number shown for any year, in column 13, that is, the index of the purchasing power of the dollar, is applied to the expenditure for public schools for that year, the resulting figure represents the amount which schools would have cost in 1914 if there had been no change in the value of the school dollar in the intervening years subsequent to 1914. For example, the index number for 1930, in column 13, is 170.7. Multiplying the amount spent for schools in 1930 —2,317 million dollars—by 58.6, the reciprocal of 170.7, we find that the cost of the 1930 school program would have been approximately 1,357 million dollars in 1914 if the dollars used to pay for this program had possessed the same buying power in both of the years 1914 and 1930. This cost would be 960 million dollars less than the 1930 cost of the same school program. Actually, school expenditures rose 1,762 million dollars between 1914 and 1930. About 960 million dollars then, or about 55 percent of this total increase in school expenditures between 1914 and 1930 was caused by the rising prices of the goods and services purchased by the schools—in other words, by the decrease in the power of the school expenditure dollar to purchase these goods and services. Figure VII depicts this fact graphically. (See page 164.)

In this connection, it is interesting to compare the indexes of column 13, Table 4, with the cost of living indexes compiled by the Bureau of Labor Statistics for the same years. Indexes of these two series for the years 1914 and 1930 are shown below. While the cost of maintaining the same standard of living increased 66 percent between 1914 and 1930, the cost of providing the same standard of schooling increased 71 percent during the same period.

These figures indicate that, if it could be assumed that the combined cost of items in-

cluded in the school budget changed between 1914 and 1930 in exact proportion to changes in the cost of items which make up the family living budget, the cost of the 1930 school program would have been 1,396 million dollars in 1914, or 40 million dollars more than the 1914 cost of that program when measured by the index developed in this bulletin. This difference of 40 million dollars between the results obtained by the use of the two indexes is not a large one, in relation to the total increase of school expenditures between 1914 and 1930. However, because this difference is relatively small, with respect to the increase in school costs between 1914 and 1930, it does not necessarily follow that it will be equally negligible when the two indexes are applied to measure changing school costs over a different period of years. The cost of the 1930 school program in 1918 would have been 143 million dollars less, as measured by the cost of living index, than that same cost as measured by the index of the cost of schooling, shown in column 13 of Table 4. The difference in the cost of the 1930 school program in 1928, as measured by the two indexes, is about 95 million dollars. Also there is a considerable difference in the results obtained from these two measures when applied to changing school costs between 1930 and 1936, as will be shown in a later section of this bulletin.

Year	*Index of the cost of living*	*Index of the cost of schooling*
1914	100.0	100.0
1930	165.8	170.7

It should be noted that this part of the total 1,762 million dollar increase in school expenditures between 1914 and 1930 was entirely beyond the control of school administrators. It was the inevitable result of economic conditions.

With 960 million dollars of the rise in school expenditures between 1914 and 1930 attributable to the decrease in buying power of the school dollar, there still remains an increase of 802 million dollars to be accounted for. The reasons for this further rise in the cost of public schools beyond that resulting from the decline in value of the school dollar will be discussed in the following pages.

IV. The Amount of School Services

A part of the rise in public school expenditures which took place between the years 1914 and 1930 was caused by the steady growth during those years in the amount of educational service which the schools were called upon to provide. If an individual who has supported a family of three in any one year must five years later provide support for a family of five, it is to be expected that his expenses will rise during the intervening period. Not only is this true, but his expenses are likely to continue to rise as the younger members of the family grow older and develop more expensive needs.

The number of children for whom the schools were required to provide an education rose steadily during the period between 1914 and 1930. The number of days during which these children were in attendance at school, due to longer school terms and better enforcement of state attendance laws, also rose steadily. Furthermore, the increase in the number of children attending the relatively more expensive high-school grades between 1914 and 1930 was many times greater than that in the grades of the elementary schools. To what extent did these facts affect the trend of public school expenditures between 1914 and 1930?

Trend of Enrolments

A total of about 19 million children were enrolled in public schools, both elementary and secondary, in 1914. In 1930 over 25.6 million children were enrolled in elementary and secondary schools. This is an increase of over 6.5 million, or about 34 percent, in the number of children for whom the schools were required to provide instruction. Column 2 of Table 5 gives figures on public school enrolments for 1914 and 1930.

Elementary-school enrolments—Enrolments in public elementary schools rose from slightly less than 18 million in 1914 to over 21 million in 1930. Column 3 of Table 5 gives the number of children enrolled in the elementary grades in 1914 and 1930. These figures show a steady upward climb in elementary-school enrolments during the entire period, altho the curve reveals a tendency to level off in the later years as 1930 is approached. Probably the principal cause of the tendency toward a lower rate of increase in elementary-school enrolments is the steady decline which has been taking place in the proportion of young persons under twenty years of age in the total population. The median age of the population rose from less than seventeen years in 1920 to over twenty-six years in 1930. According to the census enumeration there were almost 129,000 more children under five years of age in 1920 than ten years later in 1930. A restrictive immigration policy, effective since 1925, which caused a drop from 475,000 in the years 1920 thru 1924 to 229,000 between 1925 and 1929 in the excess of admissions over departures of children under sixteen years of age, also had its effect in slowing down the rate of increase in elementary-school enrolments.[1]

[1] U. S. Department of Commerce, Bureau of Foreign and Domestic Commerce. *Statistical Abstract of the United States, 1934.* Washington, D. C.: Government Printing Office, 1934. page 93.

TABLE 5.—PUBLIC SCHOOL ENROLMENTS, ATTENDANCE, AND COSTS, 1914 AND 1930

Year	Enrolments in elementary schools	Enrolments in secondary schools	Total enrolments in elementary and secondary schools	Aggregate attendance in elementary and secondary schools	Weighted aggregate attendance	Cost of schools justified by percentage change in weighted attendance from 1914
1	2	3	4	5	6	7
1914.....	17,934,982	1,218,804	19,153,786	2,255,657,142	2,250,020,399	$ 555,077,146
1930.....	21,278,593	4,399,422	25,678,015	3,672,765,005	4,957,498,204	1,079,069,972

Sources: Figures of columns 2, 3, 4, and 5 for 1914 are from the *Annual Report of the Commissioner of Education* for the year ended June 30, 1916; those for 1930 are from the U. S. Department of the Interior, Office of Education, *Biennial Survey of Education, 1928-1930.* Figures of column 6 are estimated on the basis of incomplete data on the ratio of high-school attendance to total attendance. The 1930 figure in column 7 bears the same relationship to the 1914 figure of that column as that between the figures for 1914 and 1930 of column 6.

High-school enrolments—The number of children enrolled in high schools in each year from 1914 thru 1930 is shown in Table 5, column 4. The figure for 1930 is 4,399,422 as compared with 1,218,804. The difference between these two figures represents an increase over high-school enrolments in 1914 of 261 percent—approximately 14 times as great as the increase in elementary-school enrolments during the same period. The curve of high-school enrolments reveals a steep and unbroken ascent. The period of prosperity following the World War with its rising standards of living and increasingly complex industrial system demonstrated the need of an education beyond the elementary-school level. In the depression year 1930, decreasing opportunities for employment encouraged the continuance in school of some who would otherwise have become wage-earners upon the completion of the elementary grades.

Increase in School Attendance

Aggregate school attendance—The growth in school enrolments between 1914 and 1930 was accompanied by an increase in the number of days attended by the pupils enrolled. As already stated in an earlier section of this bulletin, the children of 1930 attended school during a school year which was 14 days longer than that of 1914. Likewise, during this longer term, the children of 1930 attended school more regularly than did their older brothers and sisters in 1914. The aggregate days of attendance of all pupils (obtained by multiplying the average number of pupils attending each day by the number of days in the school term) in the public schools rose from 2,255 million in 1914 to 3,673 million in 1930—an increase of more than 62 percent. Column 5 of Table 5 gives these figures as well as those on the aggregate attendance in public elementary schools in each year between 1914 and 1930. From these figures, it is easy to see that a 62 percent increase over the total amount expended for public schools in 1914 would have been necessary in 1930 in order to provide for each child during each day of the school term the same kind of schooling that was provided during each day of the school term of 1914.

Weighted aggregate attendance—But this is not by any means a full statement of the case for the schools. Earlier paragraphs have stated that the increase in enrolments in the expensive high-school grades was greater than in the elementary grades. It is logical to assume, therefore, that the increase in attendance in high school was also proportionately greater than the increase in elementary-school attendance, altho no exact information is available on this point for the nation as a whole. The relatively greater cost of one day of attendance in the high schools as compared with one day of attendance in elementary schools must be taken into account in any calculation of the added cost of providing schooling for the greater number of children in attendance in 1930. The best way to do this, since exact figures are not available, is to estimate the greater cost of one day of schooling in the secondary grades in relation to one day of schooling in the elementary grades and then weight the estimated aggregate attendance in high schools in 1914 and in 1930 by this relatively greater cost. Adding the estimated aggregate attendance in elementary schools and the estimated aggregate attendance in high schools, weighted as described, the weighted aggregate number of days attended by all pupils in elementary and secondary schools in each of the years 1914 and 1930 can be obtained.

On the basis of figures reported by the United States Commissioner of Education [2] for cities of 10,000 population and over, it is estimated that 8.7 percent of the total aggregate days of attendance in the schools of the nation in 1914 were days of high-school attendance. This was more than 196 million days out of a total of about 2,256 million days, leaving about 2,059 million days of attendance by elementary-school pupils. The figures reported by the Commissioner of Education further indicated that in cities over 10,000 in population, a day of secondary schooling cost 2.5 times as much as a day of schooling in the elementary grades. Assuming that this same ratio of high-school costs to elementary-school costs obtained in all schools thruout the nation, and weighting each day of aggregate attendance in the elementary grades by 1, and each day of aggregate attendance in the high schools by

[2] *Annual Report for 1916*. Vol. II, Table 1, pages 47-48. The actual percentage of total attendance which was in high schools of cities over 10,000 in population, obtained on the basis of these figures was 11.1. This percentage was then adjusted to represent the estimated percent of aggregate attendance which was in high schools of all areas. See Appendix.

2.5, we get a weighted aggregate number of days of attendance in both elementary and high schools of about 2,550 million in 1914.

Figures on the proportion of aggregate attendance in elementary and high schools in 1930 are available for 35 states.[3] These data show that in these states 76.7 percent of aggregate attendance was in the elementary grades and the remainder, or 23.3 percent, was in other types of schools above the elementary grades.[4] Applying these percentages to the aggregate number of days attended in the nation as a whole in 1930, an estimated aggregate attendance in high schools of 856 million days is obtained, leaving 2,817 million days of aggregate attendance in elementary schools out of a total aggregate attendance in all types of schools of 3,673 million days. Weighting each day of aggregate attendance in the elementary grades by 1 and each day of aggregate attendance in the secondary grades by 2.5, a total weighted aggregate number of days of attendance of 4,957 million is obtained.

Details of the computations described above will be found in the Appendix of this bulletin.

Increased Attendance as a Factor in Higher School Costs

The weighted aggregate number of days of schooling, 4,957 million, provided in 1930, represents an increase of more than 94 percent over the number of such days provided by the schools of 1914. In order to provide schooling for each pupil in attendance during each day of the school year of 1930 a proportionate rise in expenditures would have to take place. *Thus, even if the purchasing power of the dollar had not declined, and even if no improvement in educational standards or practice had taken place between 1914 and 1930,* the schools in the latter year would have cost approximately 524 million dollars more than in 1914, due solely to the increased number of children enrolled and the greater regularity of their attendance.

This part of the total increase in school expenditures between 1914 and 1930 could no more be avoided than that mentioned in the preceding section of this bulletin as due to the increase in purchasing power of the school dollar. Adding the increase of 524 million dollars, caused by the greater number of days of schooling which the schools were called upon to provide, to that of 960 million dollars resulting from the lower purchasing power of the dollar, we find that approximately 1,484 million dollars of the total 1,762 million dollar rise in school costs was the result of social and economic trends which were entirely outside the control of the schools themselves.

This leaves only 278 million dollars of the total increase in school expenditures between 1914 and 1930 to be accounted for by other factors.

[3] U. S. Department of the Interior, Office of Education. *Biennial Survey of Education, 1928-30.* Washington, D. C.: Government Printing Office, 1932. Table 6, page 47.

[4] Junior, junior-senior, regular, and vocational high schools.

V. Higher Educational Standards

Preceding sections of this bulletin indicate that 84 percent, or 1,484 million dollars, of the total 1,762 million dollar increase in school expenditures between 1914 and 1930 was attributable to (1) a decline in the purchasing value of the dollar, and (2) an increase in the amount of services which the schools were called upon to provide. The remaining 278 million dollars of this total increase in school expenditures may be accounted for by the cost of improvements in school services which were put into effect during the 1914-30 period.

Standards of Living and Standards of Educating

Standards of educating, like standards of living, rose between 1914 and 1930. As the country moved into the post-war era of science and power, potential plenty, shorter working hours and more leisure, corporate action and enterprise, increased government participation in everyday life, and increased economic insecurity, educational standards changed. Standards of living were cast in a mold that placed the automobile, telephone, radio, and electrical refrigerator among the necessities of a comfortable existence. Easy transportation and communication accelerated the pace of life and increased the American people's interdependence for food supplies, clothing, and news. By creating a desire for new products, and thus opening up new occupational fields requiring some degree of specialized technical training, such changes in living standards aroused a new realization of the importance of education beyond the elementary-school level. There grew a demand that the schools should furnish the training needed for the new jobs and should assist in the adjustment necessary for the higher standards of living.

In the following pages it is possible to set forth only a small part of the evidence of the improvement which took place in educational theory and practice between the years 1914 and 1930. Many significant changes and improvements in quality cannot be indicated statistically and even on quantitative matters the available figures are often incomplete. The brief testimony here offered, however, substantiates the argument that higher standards of educating, like other higher standards in American life, are expensive to maintain.

The Curriculum

According to John Dewey, the motto for youth in school has become: "Learn to *act* with and for others while you learn to *think* and to judge for yourself."[1] With this new philosophy, education added to the basic Three R's a number of new courses and activities designed to meet the needs of the day. Research and child study suggested refinements and changes in procedure which made the learning environment potentially more effective.

Secondary schools—In 1890 when the United States Bureau of Education, now the United States Office of Education, first began to collect statistics with regard to secondary schools, the courses offered in the public schools on this level were classified under nine headings: Latin, French, German, Greek, algebra, geometry, physics, chemistry, and history. Table 6 shows the titles of headings used in 1915, the added titles used in 1928, and the percent of public secondary-school pupils enrolled in each subject.[2] Upon examination of the trends here indicated one finds that, with the exception of French and trigonometry, to a very slight degree, the traditional subjects receded in relative importance in competition with the new subjects. Proportionate enrolment in the classics and mathematics declined as vocational and social subjects were added to the curriculum. Up to 1920 the steadily increasing demand for commercial training on the part of those who were preparing to enter business positions was so little satisfied by the curriculums of public educational institutions that it had to be met by private schools. As a consequence of the extension of the commercial curriculum of public secondary schools, private business schools decreased 27.8 percent in number and 46.5 percent in enrolment by 1929.[3]

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[1] Dewey, John. "Social Change Necessitates Educational Change." *Readings in Curriculum Development.* (Edited by Hollis L. Caswell and Doak S. Campbell.) New York: American Book Co., 1937. p. 13.

[2] The years 1915 and 1928 are used because comparable figures are not available for 1914 and 1930.

[3] U. S. Department of the Interior, Office of Education. *Statistics of Private Commercial and Business Schools, 1928-1929.* Bulletin, 1930, No. 25. Washington, D. C.: Government Printing Office, 1930. p. 3.

Elementary schools—The elementary-school subjects, at least in the lower grades, changed less between 1914 and 1930 than the curriculum of the secondary school. The rudimentary subjects, such as the Three R's, continued to constitute the necessary components of elementary education. According to Mann's study, the amounts and percentages of time allotted to the Three R's (reading, writing, arithmetic, language, and spelling), to the content subjects (geography, history, citizenship and civics, social science, and nature study or elementary science), and to the special subjects (art and drawing, music, household and manual arts, handwork, health education, physical training, recess, opening exercises, projects and activities, supervised study, unassigned and free time, and miscellaneous subjects) changed in proportion.[4] The Three R's, however, still occupied almost half of an elementary pupil's time in 1926, the year nearest to 1930 for which information is available. In 1914 the Three R's consumed 55.3 percent of the total time in Grades I to VI; in 1926 they required 48.9 percent. In 1914 the content subjects occupied 12.9 percent and the special subjects, 31.8 percent of the total time. By 1926 the proportion for content subjects was 13.8 percent and for special subjects, 37.3 percent.

During this period there was a marked enrichment of the instructional program in the upper grades. Such subjects as foreign language, home economics, combination mathematics, algebra, and social science appeared as parts of the upper grade curriculum in a number of school systems. This expansion of the curriculum, combined with methods based upon studies of adolescence, led to a gradual detachment of the upper from the lower grades and gravitation toward the secondary school. A new administrative unit arose, the junior high school, which experimented with new subjects and with types of social, recreational, and health training formerly not recognized as parts of a school program. Authorities agree that this reorganization of the seventh, eighth, and ninth grades was prompted by improved teaching of the lower grades and a substantial increase in the length of the school year and in the average number of days of attendance of individual pupils. When as much could be accomplished in the first six grades as had been

[4] Mann, Carleton R. *How Schools Spend Their Time*. Contributions to Education, No. 333. New York: Teachers College, Columbia University, 1928. p. 45.

TABLE 6.—PERCENTAGE OF PUPILS IN PUBLIC SECONDARY SCHOOLS ENROLLED IN VARIOUS SUBJECTS OF INSTRUCTION, 1915 AND 1928

	1915	1928		1915	1928
1	2	3	4	5	6
1. Rhetoric	58.42	93.09	25. Zoology	3.21	.77
2. English literature	55.82		26. Spanish	2.39	9.44
3. American history		17.86	27. Trigonometry	1.48	1.96
4. English history	50.54	.87	28. Psychology	1.17	1.02
5. Ancient history		10.42	29. Geology	.48	.09
6. Medieval and modern history		11.30	30. Greek	.29	.05
7. Algebra	48.84	35.22	31. Astronomy	.28	.06
8. Latin	37.32	21.98	32. Hygiene and sanitation	.....	7.84
9. Music	31.50	26.04	33. General science	.....	17.50
10. Geometry	26.55	19.80	34. Principles of teaching	.....	.36
11. German	24.39	1.84	35. World history	.....	6.06
12. Drawing and art	22.87	18.58	36. Community civics	.....	13.39
13. Civil government	15.72	6.65	37. Sociology	.....	2.66
14. Physical geography	14.58	2.72	38. Economics	.....	5.08
15. Physics	14.23	6.85	39. Problems of democracy	.....	1.04
16. Home economics	12.89	16.48	40. Arithmetic	.....	2.42
17. Manual training	11.17	12.49	41. Shorthand	.....	8.69
18. Physiology	9.48	2.68	42. Typewriting	.....	15.17
19. Botany	9.14	1.59	43. Commercial arithmetic	.....	6.95
20. French	8.80	14.02	44. Commercial law	.....	2.64
21. Chemistry	7.38	7.07	45. Commercial geography	.....	4.84
22. Agriculture	7.17	3.66	46. Commercial history	.....	.18
23. Biology	6.90	13.57	47. Penmanship	.....	.75
24. Bookkeeping	3.42	10.67	48. Office practice and business training	.....	4.40

Source: U. S. Department of the Interior, Office of Education. *Biennial Survey of Education: 1926-1928*. Bulletin, 1930, No. 16. Washington, D. C.: Government Printing Office, 1930. p. 1057-58.

done formerly in eight, an enlarged and improved curriculum was possible.[5]

Health education—No single indication of the trend toward the enlargement of the scope of school activities is more impressive than the provision for health care and health instruction as a part of public education. Charles H. Judd makes clear this situation in *Recent Social Trends:*

> Not many years ago the home was regarded as responsible for the child's physical condition. Only contagion was thought of as concerning the school. Today the situation is changed. It is recognized that many parents must be supervised in the control of even the most rudimentary phases of children's health such as their diet. It is further recognized that schools must interest themselves in the health of children if they are to accomplish what they are commissioned to accomplish in the way of intellectual training. In response to the demand for health education, courses in hygiene are increasingly administered as part of the regular curriculum; school luncheons are provided in many schools; nurses and visiting teachers are frequently employed as members of the regular staff; and psychiatrists are consulted in the best organized school systems in cases of mental abnormalities.[6]

Recognition of individual differences—Several aspects of the school procedure pertain to a consideration of individual differences. The growth in the use of mental tests and measurements, especially since the World War, may be interpreted as a recognition of differences in mental ability and other capacities. No direct evidence of the actual number of children tested is available, but the number of test blanks sold by a leading supplier show the trend: under 500,000 intelligence tests were sold in 1919-20, while in 1930-31 over 5,000,000 were sold. Sales of achievement tests increased 1300 percent from 1921-22 to 1930-31. In 1923, research departments which included testing in their work were reported in 45 school systems, while in 1931 there were 157 such bureaus.[7] Tests and measurements were used to classify pupils into homogeneous or ability groupings which offered possibilities for more intelligent treatment, especially of the superior, gifted child at one extreme and the mentally retarded child at the other.

Children suffering from mental or physical handicaps, delinquent children, and children in remote and isolated districts were all being provided for as never before. The increase in the number of some of the special types of schools between 1915 and 1927 is shown in Table 7. In addition to these special schools, in many cities of 10,000 and more the public school systems by 1930 were providing special education for crippled children, children with defective speech, malnourished and underweight children, children presenting peculiar behavior problems, and gifted children.

TABLE 7.—SCHOOLS FOR BLIND, DEAF, AND FEEBLE-MINDED AND SUBNORMAL CHILDREN, 1915 AND 1927

Kind of school	1915	1927
1	2	3
Schools for blind children	62	80
Schools for deaf children	150	168
Schools for feeble-minded and subnormal children	117[a]	303

Source: U. S. Department of the Interior, Office of Education. *Biennial Survey of Education: 1926-1928.* Bulletin, 1930, No. 16. Washington, D. C.: Government Printing Office, 1930. p. 1156, 1166, 1205.

[a] This figure for 1914.

Teachers

With an enlarged curriculum at all levels of public education and a changing point of view regarding the relative place of the teacher and the pupil in the classroom procedure, additional demands were made on teacher preparation between 1914 and 1930. Professional standards were raised and more training was required.

The World War had the immediate effect of retarding and in some cases setting back the forces which had been working for the improvement of the preparation of teachers. Certification standards were drastically lowered in many states; teachers' salaries were allowed to lag behind those paid other workers and to remain below the mounting costs of living; enrolments in courses for teachers decreased sharply; and teaching as an occupation lost caste. The end of the school year 1919-20, however, marked the beginning of a decade of progress in the development of the educational, social, economic, and professional

[5] President's Research Committee on Social Trends. *Recent Social Trends in the United States.* New York: McGraw-Hill Book Co., 1933. p. 337.
[6] President's Research Committee on Social Trends, *op. cit.*, p. 370.
[7] President's Research Committee on Social Trends, *op. cit.*, p. 780.

status of public school teachers which probably has not been equaled in any other period of two or three times its length.[8]

During this period the teachers college movement made its greatest progress. The number of normal schools reported in 1919-20 was 138, and in 1929-30 it was 66. In the same decade the number of teachers colleges increased from 39 to 125. As further evidence of the upgrading tendency in the education of teachers, there was the reduction of the number of county normal schools from 95 to 68 and the abandonment by at least 12 states of their high-school training classes for teachers.[9]

Other changes which tended to increase the amount of education considered desirable for teachers were: The centralization of certification authority; the decrease in the number of certificates issued as a result of examination; the rapid development of the materials in the field of education and psychology which required a longer period of preservice preparation if they were to be mastered without sacrificing time needed for the acquisition of subject matter; the rapid growth of local and national associations of teachers with their campaigns for increasing the professional status of public school teaching; and the increased competition for positions which appeared during the last part of this decade and which encouraged many prospective teachers to continue in college one or two years longer than the required minimum period in order to increase their chances of securing positions.[10]

In 1918 a commission of the National Education Association stated that approximately half of the 600,000 teachers in the country had no more than four years' education beyond the eighth grade.[11] The Research Division of the N. E. A. in 1923 issued a statement that more than half the teachers in the United States still had less preparation than graduation from a four-year high school plus graduation from a two-year normal school.[12] In 1930 the average amount of preparation was about three years of college training, and state minimum certification standards had improved markedly, as shown in Table 8. These standards applied both to elementary- and to secondary-school teachers.

TABLE 8.—TRAINING PREREQUISITES FOR CERTIFICATING TEACHERS WITHOUT EXPERIENCE, TEMPORARY AND EMERGENCY CERTIFICATES NOT CONSIDERED

Minimum prerequisites	Number of states	
	1921	1930
1	2	3
High-school graduation and three years' advance training	0	2
High-school graduation and two years' advance training	0	5
High-school graduation and one year's advance training	0	11
High-school graduation and some advance training, but less than one year	4	13
Four years' secondary school (may or may not include professional training)	14	5
No definite requirement stipulated	30	12

Source: Adapted from U. S. Department of the Interior, Office of Education. *National Survey of the Education of Teachers.* Vol. V, "Special Survey Studies." Washington, D. C.: Government Printing Office, 1935. Table 6, p. 46.

Summer session enrolments increased from 118,307 in 1911 to 425,100 in 1931. In 1931, 273,148 summer session students, a number equivalent to 28.6 percent of the total number of teachers in the United States, were enrolled in courses in education.[13]

Quantity of training in terms of time spent in school is not the same as quality of training or appropriateness or effectiveness of training. With the assurance, however, that amount of schooling does represent an exposure to additional information and points of view, that it also provides greater opportunity to read systematically, and that a longer period of training results in greater maturity in new teachers, it is reasonable to suppose that the new teacher education requirements led to improved teaching. Such training was an expense to the teacher. Thus, it would seem equally reasonable that schools should pay more for improved service.

Instructional Methods and Materials

Altho it still survived in some sections, the recitation method of teaching and learning was

[8] U. S. Department of the Interior, Office of Education. *National Survey of the Education of Teachers.* Vol. VI, "Summary and Interpretations." Washington, D. C.: Government Printing Office, 1935. p. 32.

[9] *National Survey of the Education of Teachers, op. cit.*, Vol. VI, p. 33.

[10] *National Survey of the Education of Teachers, op. cit.*, Vol. VI, p. 33-34.

[11] National Education Association, Commission on the National Program in Education. *Federal Appropriations for the Preparation of Public-School Teachers.* Washington, D. C.: the Association, 1918. p. 4.

[12] National Education Association, Research Division. "Facts on State Educational Needs." *Research Bulletin* 1: 43; January 1923.

[13] National Education Association, Research Division. "Growth of Summer School Attendance." *Journal of the National Education Association* 20: 298; November 1931.

very generally recognized as inadequate by 1930. Laboratory experimentation was carried on on a large scale, especially in courses in the sciences. Shop exercises had been introduced in many schools. Radios and motion picture equipment were being provided for some of the larger school systems. Library reference work was becoming common even on the elementary-school level. Statistics show that in 1923 the number of schools with libraries of 3000 volumes or over (most of which were in secondary schools) was 947. In 1929 that number had increased to 1982—over 100 percent in six years.[14] School libraries had moved from the small, dark rooms with a few shelves of musty, tattered, out-of-date books to well-lighted rooms, lined with standard library shelving and equipped with tables and chairs. Books were catalogued, and full-time teacher-librarians with special library training were in charge.

In order to provide opportunity for a new type of intellectual guidance known as "supervised study," many schools had reconstructed their daily programs by 1930. Sometimes a separate period was set aside for consultations between pupils and teachers. Sometimes the class periods were lengthened from forty or forty-five minutes to sixty or ninety minutes and the teachers were directed to use the longer periods partly for discussion and partly for guided study.

The development of more informal types of instruction was accompanied by a rapid growth of the "guidance movement"—vocational guidance, educational guidance, social guidance, and personal guidance. The enlargement of the curriculum, which was designed to meet the varying tastes and capacities of individual pupils, and the fact that the school was placing greater responsibility on the pupil to plan his own education required as counterparts a greater attention to the needs of the individual and the devotion of much energy to the guiding of pupils. In many secondary schools counselors, or special officers known as deans of boys and deans of girls, were appointed and assigned the duty of studying the abilities and prospects of students and of giving them wise counsel in planning their futures.

The movement for free textbooks for public school children gained impetus during the period under study. In 1915 there were 15 states with laws which required free textbooks and 17 other states with laws which authorized the establishment of free textbook systems. At the end of 1931 laws which required free textbooks were found in 23 states and the District of Columbia, and 22 other states had laws which authorized local school corporations to establish free textbook systems.[15] Such additional services of the states to their public school children contributed to larger school budgets.

School Buildings and Equipment

We have already seen that expenditures for school buildings, sites, and equipment increased from 91 million dollars in 1914 to 371 million dollars in 1930. Some people have expressed the belief that the growth of such expenditures during this period was far in excess of needs. During the 1914-30 period, however, the conception of the ideal school plant and its purpose underwent a radical change. While formerly the school buildings were little more than shelters for children as they sat in their seats and received instruction, they are now increasingly planned to meet the environmental needs of the school program. By 1930 many larger school systems had special administrative divisions in charge of building plans and the smaller systems more frequently than formerly employed architects who recognized the principle that a school building is not properly planned unless full regard is given to the instructional purposes of the school.

Charles H. Judd, in his chapter on "Education" in *Recent Social Trends,* lists the rooms included in a new junior high-school building erected in the early 1930's:

Thirty regular classrooms
An auditorium seating 728 persons and equipped with motion picture booth, stage, proscenium, etc.
One boys' gymnasium (60 by 90) equipped with lockers, showers, director's office, etc.
Two girls' gymnasiums (60 by 54 and 60 by 44) equipped with lockers, showers, restrooms, and director's office
A corrective gymnasium
A swimming pool
A cafeteria seating 650 children at one time
An administration suite for the principal and deans

[14] U. S. Department of the Interior, Office of Education. *Biennial Survey of Education, 1928-1930.* Vol. I. Washington, D. C.: Government Printing Office, 1932. p. 665.

[15] Keesecker, Ward W. *Textbooks for Public-School Children.* Circular No. 60. Washington, D. C.: Office of Education, U. S. Dept. of the Interior, 1932. p. 1. (Mimeo.)

A library with an outside entrance so that it may be available for adult community use.
A doctor's, dentist's, and nurse's suite
A civics room
Four science rooms
Four art rooms
Two mechanical drawing rooms
Two commercial rooms
One typewriting room
One band and orchestra room
Two chorus rooms
Two sewing rooms
Two cooking rooms
One wood shop
One printing shop
One general metal shop
One home mechanics room
One electric shop
Special rooms for the janitorial and engineering force
Special restrooms and workrooms for teachers.[16]

Such a school would be artistically constructed and carefully planned with reference to lighting, ventilation, and toilet facilities. It would be equipped with hygienic furnishings and adequate safety devices in case of fire or other dangerous emergency. The grounds would be landscaped and well kept.

School grounds underwent expansion no less extensive than that which took place in buildings. A report which may be cited as strong evidence in support of this statement contains the following account of the provisions made by law with regard to schoolyards: "Laws have been passed in eight states requiring that certain areas be provided for school playgrounds. Rules and regulations have been made by state boards of education in twenty states requiring certain areas for school sites. Definite areas have been suggested as standards by city and rural schools of various enrolments by thirty-six state departments of education." [17]

The question arose as to whether the number and cost of improved school buildings constructed during the years 1914-30 was greater than was justifiable. The Research Division of the National Education Association in 1935 [18] sought to estimate the annual expenditures necessary between 1918 and 1934 to meet the nation's school building needs. This estimate was based on (1) the conservative assumption that the average life of a school building is 50 years, and (2) an average cost of new school building construction, sites, and equipment of $400 per pupil to be housed, adjudged satisfactory by a lay commission appointed in New Jersey for the purpose of investigating local government expenditures.[19] The Research Division found that only in the years 1926-30, inclusive, were expenditures sufficient to meet the need for new school buildings as estimated on the basis of these criteria.

In spite of the improvement made during the decade from 1920 to 1930, a large number of unsafe, unsanitary, and generally unsuitable school buildings were still in use at the end of this period. In 1930 there were still in existence over 148,000 one-room rural schools, altho this number represented a decrease of almost 80 percent during the preceding decade.[20]

Extension of the School Organization

Public schools entered increasingly into the field of adult education and preschool education during the 1914-30 period. Classes for illiterates and Americanization classes for foreigners who were unacquainted with the English language and with American institutions became common in all the larger cities. Vocational training for adults was provided by night schools, by various types of extension courses, and by correspondence courses. The increase in night school attendance, as shown in Table 9, gives evidence of this trend.

TABLE 9.—CITIES OF 10,000 POPULATION AND MORE REPORTING NIGHT SCHOOLS AND PERSONS ENROLLED IN NIGHT ELEMENTARY SCHOOLS, HIGH SCHOOLS, AND VOCATIONAL SCHOOLS, 1918 AND 1930

Item	1918	1930
1	2	3
Number of cities	338	451
Number of persons enrolled:		
Elementary schools	210,440	370,333[a]
High schools	258,299	490,502
Vocational schools	70,529	138,060

Source: U. S. Department of the Interior, Office of Education. *Biennial Survey of Education: 1916-1918.* Vol. III, p. 209, and 1928-1930, Vol. II, p. 20.

[a] Includes persons in Americanization schools.

[16] President's Research Committee on Social Trends. *Recent Social Trends in the United States.* New York: McGraw-Hill Book Co., 1933. p. 359.

[17] Ready, Marie M. *School Playgrounds.* Pamphlet No. 10. Washington, D. C.: Office of Education, U. S. Dept. of the Interior, 1930. p. 39.

[18] National Education Association, Research Division. "The Nation's School Building Needs." *Research Bulletin* 13: 23; January 1935.

[19] Commission To Investigate County and Municipal Taxation and Expenditures. (Harley L. Lutz, director.) *Report No. 8.* Trenton, N. J.: the Commission, 1932. p. 99-100.

[20] U. S. Department of the Interior, Office of Education. *Biennial Survey of Education: 1928-1930.* Vol. II, p. 35.

By 1930 twelve state departments of education reported projects in parent education, four of which had organized new units with trained experts in child development and parent education in charge of the work.[21] Preschool education for very young children was offered by public school systems thru 226 nursery schools in 1930; but four nursery schools were reported as organized in or before the year 1920.[22] Parent education classes were conducted in conjunction with many of these nursery schools.

Vacation schools, or summer schools, were commonly maintained by the school systems of the larger cities in 1930. Summer high schools offered courses for pupils who were behind in their credits or for pupils who wanted to graduate earlier than at the end of the usual four years. Some of the summer elementary schools were like the high schools in purpose; others offered limited programs with chief emphasis on play and handwork. A few cities, including Newark, New Jersey, Nashville, Tennessee, and Aliquippa, Pennsylvania, were experimenting with all-year schools.[23]

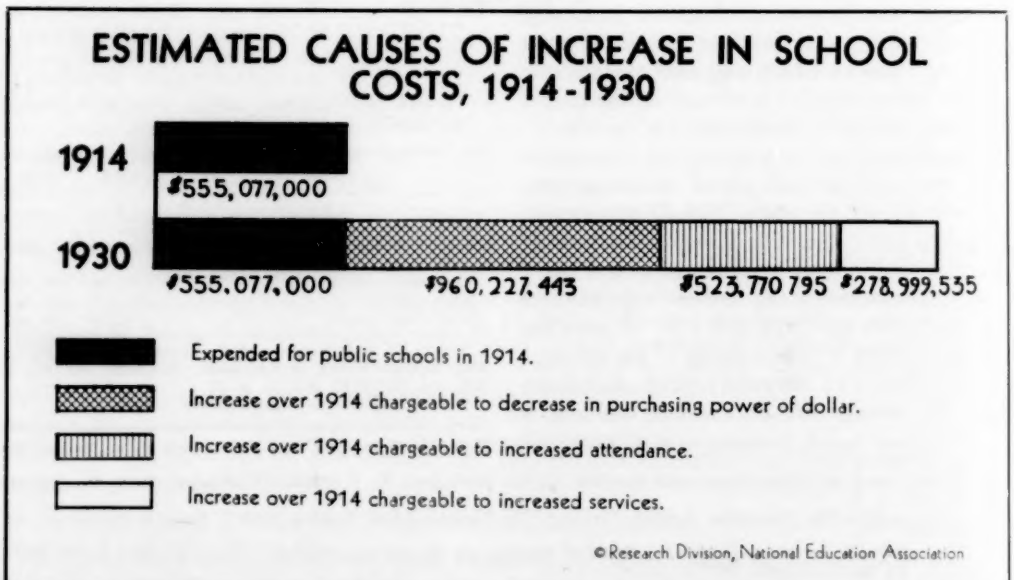
Such vertical extension of public school programs to include the education of the individual from shortly after birth on thru adult life is a tremendous undertaking. By 1930 this extension was being accepted as permanent educational structure to meet the needs of modern life. As in all enterprises, extended services can be obtained only at greater cost.

Trend of Increased Expenditures Caused by Added and Improved School Services

Figure VII shows for the years 1914 and 1930 the amount of the total increase in school expenditures over those of 1914, which was caused by each of the three following factors: (1) depreciation of the purchasing value of the school dollar; (2) the increase in the amount of services demanded of the schools; and (3) the cost of added and improved school services. The smallest sector of the longer of the two bars shown represents the proportion of the total increase which was due to the last of these factors—about 15 percent. In other words, thruout the whole period 1914-30 that increase in school costs which was subject to the control of school administrators was only a minor fraction of the total increase in school costs. The bulk of the rise in school expenditures over the entire period was the inevitable result of social and economic forces outside the school.

[21] U. S. Department of the Interior, Office of Education. *Biennial Survey of Education: 1928-1930*. Vol. I, p. 447.
[22] *Ibid.*, p. 64.
[23] President's Research Committee on Social Trends, *op. cit.*, p. 346.

FIGURE VII



VI. Factors Affecting School Cost Trends, 1930 to 1936

The three preceding sections of this bulletin have been devoted to an analysis of school costs between 1914 and 1930. They have shown that the increase in the amount spent for schools during the 1914-30 period can be accounted for on the basis of three factors: (1) change in the purchasing power of the school dollar; (2) change in the number of children enrolled in school and the number of days during which they were in attendance; and (3) change in the quality and extent of the school program. Reasons for limiting this analysis to the period of rising costs from 1914 to 1930 have already been stated.[1] Eight years have now passed since the close of that period—years in which the trend of school expenditures reversed its previous direction, held continuously since 1880. What relation did the three above named factors bear to the decline in school expenditures following 1930? This question cannot be answered in detail on the basis of the incomplete information now available. It will be given brief and general consideration, however, in the following paragraphs.

Purchasing Power of the School Dollar

Table 10 presents indexes of the comparative cost of the 1930 school program in each of the years 1930, 1934, and 1936. Indexes of the purchasing power of the school dollar are shown for these years in column 4 of this table. All figures for 1936 are preliminary.

Change in the purchasing power of the school dollar between 1930 and 1934—According to the indexes of Table 10, the power of the dollar to purchase goods and services used in the public schools rose 24 percent between 1930 and 1934, from 59 cents to 73 cents on a 1914 base. This was a decline of slightly less than 20 percent in the cost of the 1930 school program. The total number of dollars actually spent for schools, however, dropped 26 percent between the same two years. While the school program for which 2,317 million dollars was spent in 1930 could have been supported with an expenditure of, 1,862 million dollars in 1934, the actual amount spent for school support in that year was only 1,720 million dollars.[2]

Change in the purchasing power of the school dollar between 1934 and 1936—Between 1934 and 1936 the value of the school dollar again declined to 64 cents, or about 12 percent. The amount spent for public schools rose in slightly greater proportion, about 14 percent, but not sufficiently to make up for the loss suffered between 1930 and 1934. In 1936 school expenditures were still 15 percent below their 1930 level, while the 1930 school dollar was worth only $1.09. A payment of 2,120 million dollars would have been required in 1936 to support a school program equal to that provided in 1930, even if there had been no change in enrolments and attendance between those two years. Actually, only 1,969 million dollars was spent for schools in 1936.

Measured on the basis of the cost of living index compiled by the Bureau of Labor Statis-

[1] See page 140.
[2] See Table 1.

TABLE 10.—CHANGES IN COST OF THE 1930 SCHOOL PROGRAM AND IN ACTUAL EXPENDITURES FOR PUBLIC ELEMENTARY AND SECONDARY SCHOOLS, 1930, 1934, AND 1936

Year	Actual expenditures for public schools	Cost of the 1930 school program	Indexes (1930 = 100)			Indexes (1914 = 100)		
			Actual school expenditures	Cost of education	Purchasing power of the school dollar	Actual school expenditures	Cost of education	Purchasing power of the school dollar
1	2	3	4	5	6	7	8	9
1930	$2,316,790,384	$2,316,790,384	100.0	100.0	$1.00	417.4	170.7	$0.59
1934	1,720,105,229	1,862,014,231	74.2	80.4	1.24	309.9	137.2	.73
1936	1,968,898,198	2,120,481,827	85.0	91.5	1.09	354.7	156.2	.64

Source: Based on figures on actual school expenditures reported by the U. S. Department of the Interior, Office of Education, and indexes of the cost of articles and services purchased by the schools obtained as described in Part III of this bulletin.

tics, the cost of the 1930 school program in 1936 would have been 1,948 million dollars. The difference between this cost and the actual cost of the 1930 school program would be 171 million dollars less than that discovered on the basis of the index contained in columns 5 and 8 of Table 10.

School Enrolments and Attendance

There has been in recent years a tendency, already noted in this bulletin,[3] for school enrolments to decline. This tendency, altho discernible in elementary-school enrolments since 1930, did not result in a reduction of total school enrolments until after 1934.

While elementary-school enrolments dropped about 2 percent between 1934 and 1936, the reduction in total enrolments in both elementary and high schools amounted to less than 1 percent. During the whole period 1930 to 1936, while elementary enrolments fell off 4 percent, there was a net increase in total enrolments of 22 percent. Furthermore, enrolments in the more expensive secondary grades during that period rose 268 percent. Figures for 1930 and 1936 on the aggregate days of attendance in both elementary and high schools reveal an increase from 3,673 to 3,858 million days, or about 5 percent.

Change in weighted days of attendance—Assuming that the aggregate attendance of pupils in the nation as a whole is distributed between elementary and high schools in the same proportion as in ten states, and weighting each day of high-school attendance by 2.5 and each day of elementary-school attendance by 1.0, in accordance with the procedure described on pages 156-57, a rise in weighted attendance in both elementary and high schools from 4,957 million days to 5,619 million days is discovered to have taken place between 1930 and 1936. This is an increase of over 13 percent. To have offered to each child in attendance in 1936 the same quality of schooling provided in 1930 would have called for a proportionate increase in school expenditures, from 2,317 million dollars to 2,626 million dollars, if there had been no change in the purchasing power of the school dollar between those two years. It is clear that no part of the reduction in public school support during the period 1930-36 can be accounted for on the basis of school enrolment and attendance trends. On the other hand, these trends would have nullified that part of the reduction in school expenditures which was proportionate to the changing value of the school dollar between those two years and called for a net increase of 86 million dollars,[4] if no other factors had been operating.

Table 11 gives figures for total attendance, aggregate attendance, and aggregate weighted days of attendance, in 1930 and 1936.

Quality and Scope of the Educational Program

Preceding paragraphs have shown that in spite of the rise in purchasing power of the school dollar, it would have cost 2,403 million dollars in 1936 to provide for the children then in attendance upon the public schools an educational program equal to that provided in

[3] See pages 136, 155-56.

[4] The difference between the actual cost of the 1930 school program and the cost of that program in 1936 raised 13 percent.

TABLE 11.—CHANGE IN PUBLIC SCHOOL ATTENDANCE AND EXPENDITURES, 1930 TO 1936

Year	Aggregate attendance in public elementary and secondary schools [a]	Weighted aggregate attendance [b]	School expenditure justified by percentage change in weighted attendance from 1930		Actual school expenditures	
			Amount	Index	Amount	Index
1	2	3	4	5	6	7
1930	3,672,765,005	4,957,498,204	$2,316,790,384	100.0	$2,316,790,384	100.0
1936	3,857,686,691	5,618,914,399	$2,625,850,221	113.3	$1,968,898,198	85.0

[a] Based on data reported by the United States Office of Education.

[b] Estimated on the basis of the distribution between elementary and high schools of school enrolments and school attendance in 35 states.

the year 1930. This cost compares with an actual expenditure for schools in 1936 of 1,969 million dollars. While it is probable that some of the difference of 425 million dollars between these two amounts represents actual savings resulting from constructive economies in school administration effected during the depression years, the great bulk of this saving was effected at the expense of school efficiency.

Improvement of school services—The full impact of the depression was not felt by the schools until 1932 or 1933. Before that time less serious financial difficulties had brought about an effort to retrench along lines which would be least harmful. By 1933, however, dwindling tax revenues and slashed budgets had resulted in a general impairment of school services.

This was not the history of the schools alone, during this period. All public services underwent a similar experience. It has already been shown, however, in Part I of this bulletin, that the schools suffered most. Important school services were dropped, the pupil-teacher ratio was increased, teachers were dismissed, and thousands of teachers were obliged to give their services for a return lower than that set up by National Recovery Administration codes as a minimum wage for unskilled labor. Table 12 shows the relation of this impairment of school services as well as that of the changes in attendance and in the value of the school dollar to the trend of school expenditures between 1930 and 1936.

Counteracting tendencies—During the depression period, however, certain countertendencies gradually made their appearance. These had the effect of modifying somewhat the situation in which the schools found themselves. School districts in some rural areas took advantage of the higher purchasing power of the expenditure dollar to improve the quality of their teaching service.[5] Certification standards were raised. There is evidence that the general level of training of rural teachers was distinctly higher in 1936 than in 1930.

Friends of education, aroused by the attacks made upon the schools, came to its defense protesting against further curtailment of school funds and school services. This aroused an increased awareness of the schools as an essential public function and of the dangers lying in the neglect of this function. One of the results was aid from the federal government for certain special projects.[6] Another result was the somewhat more liberal state support provided in 1935-36. Legislation enacted in 1937 indicates that this new rise in school income continued thru the biennium 1936-38.

Even if this rise becomes the beginning of a new long-time upward trend in school expenditures, it will be years before the schools in some areas of the country can make up for the losses suffered in the years 1930 to 1934. The problem of finding sufficient funds for the support of state functions which are of nationwide importance, either from state sources or thru federal assistance to the states, is one demanding early solution.

[5] U. S. Department of the Interior, Office of Education. *Minimum State Educational Requirements in Years above High School Graduation.* Washington, D. C.: the Office, December 1937. 4 p. (Mimeo.)

[6] Rural schools, nursery schools, continuation schools, school building projects, Civilian Conservation Corps, and loans.

TABLE 12.—FACTORS AFFECTING CHANGES IN SCHOOL COSTS 1930 TO 1936

Year	Cost of education	Change (+ or −) from 1930	Amount of change (+ or −) chargeable to:		
			Change in value of school dollar	Change in attendance	Change in quality and scope of school program
1	2	3	4	5	6
1930	$2,316,790,384	.....	.....	.....	.....
1936	1,968,898,198	−$347,892,186	−$196,308,557	+$282,872,225	−$434,455,854

VII. Summary

In 1870 public school expenditures amounted to 63 million dollars. In 1930 they were almost 2,317 million dollars. This is an increase of 2,253 million dollars. In 1936 school expenditures of 1,968 million dollars were about 26 percent below their 1930 level and 200 percent above their level of 555 million dollars in 1914.

During the whole period from 1870 to 1936, the trend of school expenditures was almost continuously upward. Only during the four years beginning with 1875, and again in the four-year period following 1930, was there any decline.

When studied, these two brief depression periods reveal certain points of similarity, in that they both occurred approximately a decade after the close of a war and each lasted four years before a new upward turn became evident. However, the second of these periods was far more severe than the first. School costs declined 26 percent between 1930 and 1934, as compared with a drop of about 8 percent between 1875 and 1879.

School costs and total population—The growth in school expenditures, between 1870 and 1936, was faster than the growth in general population, and also faster than the growth in school enrolments. The average annual cost of schools to each inhabitant of the United States rose from $1.64 in 1870 to $18.82 in 1930 and $15.33 in 1936. The cost of schools for each pupil enrolled was $9.23 in 1870, $90.22 in 1930, and $74.67 in 1936.

School costs and national income—Increases in the national income have usually kept pace with the increase in school expenditures. In each of the years between 1914 and 1920 about 1.5 percent of the national income was used for the payment of school costs. This percent rose to 2.5 percent in 1921 and remained at about that same relative level thruout the period 1921-29. The proportion of national income represented by school costs increased to slightly more than 3 percent in 1930 and continued to increase in the years following thru 1933, after which it dropped again to its 1930 level.

School and other governmental costs—Since 1926 the schools have received a steadily decreasing share of government costs. At a time when expenditures for all types of public education were declining 26 percent, the costs of other government services rose more than 32 percent.

Purposes of school expenditures—Funds for the support of public schools are used to purchase a wide variety of goods and services. By far the largest single item of expenditure in the public school budget is for salaries and wages. The second largest expenditure is for capital outlays—that is, the purchase of school sites, school buildings, and the permanent equipment of these buildings. Other items of less importance from a financial standpoint include fuel and light, textbooks and supplies, maintenance of the school plant in good repair, interest, fixed charges, and certain coordinate or auxiliary activities.

Changes in distribution of expenditures—If school budgets for any two years are compared, the reason for changes in total school costs between these two years may be revealed as due to a disproportionate increase in the expenditures for one or more of the items enumerated in the previous paragraph. However, a comparison of the school budgets of 1914 and 1930 indicates that the pattern of school spending was very little changed between these two years. The trend of school expenditures during this period, therefore, cannot be attributed to an overexpansion of any part of the school program. It is necessary, then, to look elsewhere for the reasons for the growth in school expenditures.

Increase arising from changing purchasing power, 1914-30—About 960 million dollars, or 55 percent, of the total increase in school expenditures, between 1914 and 1930, was caused by a decline in the purchasing power of the school dollar. Prices of goods and services contained in the school program were 70.7 percent higher in 1914 than in 1930. It would have cost 1,357 million dollars in 1914 to support the same school program for which the schools paid 2,317 million dollars in 1930.

Increases in costs and enrolments, 1914-30—Increased enrolments in the schools, especially in the more expensive high-school grades, and the greater number of days attended by those

enrolled, in 1930 as compared with 1914, added another 524 million dollars to the cost of schools. The combined added cost of schools resulting from this cause and from the decrease in purchasing power of the school dollar, mentioned above, accounts for 1,484 million dollars, or 84 percent, of the total 1,762 million dollar rise in school expenditures between 1914 and 1930. Thus 84 percent of the total increase in school expenditures between the two years can be attributed to social and economic trends entirely outside the control of school administrators.

Increases in costs and improved services, 1914-30—The preceding analysis leaves only 278 million dollars, or 16 percent, of the total increase in school expenditures still to be accounted for. The years 1914 to 1930 were characterized by rising living standards. Standards of educating also rose during this period. In response to changing social and industrial needs, the schools began to perform new types of service. Improvements were made in those types of service already rendered by the schools. The addition of these new and added services clearly justified an increase of 278 million dollars in the cost of public schools.

Increases in costs and purchasing power, 1930-36—Between 1930 and 1936 the purchasing value of the public school expenditure dollar rose from 59 to 64 cents, on a 1914 base. In other words, the 1930 school program could have been supported in 1936 with an expenditure of 2,120 million dollars, or 9 percent less than the 2,317 million dollars spent for that program in 1930. Actually, the school expenditures of 1936 amounted to only 1,969 million dollars, or 26 percent less than in 1930.

Decreases in costs and enrolments, 1930-36—In spite of a decrease in elementary-school enrolments between 1930 and 1936, and in total enrolments between 1934 and 1936, the aggregate number of weighted days of pupil attendance in elementary and high schools increased 13 percent between 1930 and 1936. This would have called for an increase of 13 percent between these two years in the cost of any school program. In order, therefore, to make available an amount and quality of schooling equal to that provided in 1930 for each pupil in attendance in 1936, an expenditure for schools of 2,394 million dollars would have been necessary in the latter year. This would be an increase over the actual 1936 expenditure for schools of 425 million dollars.

Decreases in costs and services, 1930-36—According to these figures, 425 million dollars was saved in 1936 at the expense of an adequate and efficient school program. While it is possible that certain economies which did not lower the quality of school programs were responsible for a small part of this reduction in cost, there can be no serious question that school services suffered serious impairment, especially in the years 1933 and 1934. Expansion of governmental functions, increasing tax burdens, and the preemption by the federal government of the major part of the revenues available from certain tax fields formerly reserved to the states will make it difficult for the schools to recover from the losses suffered during the depression years.

APPENDIX

A. DERIVATION OF FIGURES ON ELEVEN ITEMS OF SCHOOL EXPENDITURE CONTAINED IN TABLES 2 AND 3

1. Derivation of Figures on Eleven Items of School Expenditure in 1913-14 (Table 2)

a. *Salaries and wages.* (Table 2, Item 1). The total of $373,069,332, estimated to have been spent for salaries and wages of all classes of school employees in 1913-14, is the sum of the following: (1) $323,610,915, salaries of teachers, principals, and superintendents, as shown in the *Annual Report of the U. S. Commissioner of Education for 1916,* Volume II, page 20; (2) $11,403,726, salaries of administrative and business employees of the public schools, estimated on the basis of the percent of expenditures for general control used for the payment of these salaries in 1917-18, 1919-20, and 1921-22, according to the *Biennial Surveys of Education* for *1916-18, 1918-20,* and *1920-22,* published by the U. S. Department of the Interior, Bureau of Education; (3) $30,971,931, salaries and wages of building engineers and janitors, estimated on the basis of the percent of the total expenditure for the operation of the school plant, used to pay such salaries and wages in 1917-18, 1919-20, and 1921-22, as reported in the *Biennial Surveys of Education* for *1916-18, 1918-20,* and *1920-22;* (4) $1,312,714, salaries of school librarians, estimated on the basis of the median percent (78.4) of total expenditures for school libraries in 37 cities, as reported in the *Journal of the American Library Association* for December 1934, December 1935, and February 1937; (5) $1,041,983, salaries of doctors, dentists, nurses, and other persons employed in connection with school health services, estimated on the basis of data reported by ten city school systems and information furnished by the National Organization of Public Health Nursing; (6) $660,737, wages paid to school bus drivers, estimated on the basis of data reported by the U. S. Department of Commerce, Bureau of the Census, as to the percent (8.62) of total payments by school districts to contract carriers for pupil transportation services, which was used to pay the wages of school bus drivers; (7) $1,024,049, salaries of school attendance officers, estimated on the basis of the percent of total school expenditures devoted to providing school attendance services in 1917-18, 1919-20, and 1921-22, as reported in the *Biennial Surveys of Education* of the federal Office of Education, for the years 1916-18, 1918-20, and 1920-22; and (8) $3,043,277, salaries and wages of persons engaged in connection with the provision of school lunches, management of school cafeterias, and other miscellaneous activities of the schools, estimated arbitrarily at 50 percent of total estimated expenditures for these activities.

b. *Construction of school buildings.* (Table 2, Item 2). The total amount of capital outlays in 1913-14, shown in Table 2 (the sum of items 2, 3, and 4), is from the *Annual Report of the U. S. Commissioner of Education for 1916,* Volume II, "Statistics of State School Systems," page 20. The estimated expenditure for the construction of school buildings shown in Table 2 is based on the percent of total capital outlays spent for school buildings and sites in 1917-18, 1919-20, 1921-22, as reported in the *Biennial Surveys of Education* by the federal Office of Education for 1916-18, 1918-20, and 1920-22, and on an estimate by the Better Schools League, quoted by Fred Engelhardt in *Planning School Building Programs* (page 144), that an average of 12 percent of school bond issues and appropriations for school building construction is devoted to the purchase of school sites.

c. *School sites.* (Table 2, Item 3). Estimated as described under "b" above.

d. *School equipment.* (Table 2, Item 4). Estimated on the basis of the percent of total capital outlays devoted to this purpose in 1917-18, 1919-20, and 1921-22, as reported in the federal Office of Education's *Biennial Surveys of Education* for *1916-18, 1918-20,* and *1920-22.*

e. *Operation of the school plant.* (Table 2, Item 5). The figure shown in Table 2 is exclusive of wages and salaries paid to school janitors and engineers. It was estimated on the basis of the percent of total school expenditures, less expenditures for salaries of teachers, principals, and superintendents, capital outlays, and expenditures for textbooks and supplies, devoted to the operation of the school plant in 1917-18, 1919-20, and 1921-22, as reported in the federal Office of Education's *Biennial Surveys of Education* for *1916-18, 1918-20,* and *1920-22,* and then deducting from the result the estimated amount of wages and salaries obtained as described under "a(3)" above.

f. *Maintenance of the school plant.* (Table 2, Item 6). Estimated on the basis of the percent of total school expenditures, less expenditures for salaries of teachers, principals, and superintendents, capital outlays, and expenditures for textbooks and supplies, devoted to this purpose in 1917-18, 1919-20, and 1921-22, as reported in the federal Office of Education's *Biennial Surveys of Education* for *1916-18, 1918-20,* and *1920-22.*

g. *Textbooks.* (Table 2, Item 7). Estimated on the basis of the percent of the total expenditure for textbooks and supplies devoted to the purchase of textbooks in 1917-18, 1919-20, and 1921-22. This percent was applied to the total expenditures for textbooks and supplies as shown in the *Annual Report of the U. S. Commissioner of Education for 1916,* Volume II, page 34.

h. *Instructional supplies.* (Table 2, Item 8). Estimated on the basis of the percent of total expenditures for textbooks and supplies devoted to the purchase of instructional supplies in 1917-18, 1919-20, and 1921-22. This percent was then applied to the total expenditure for textbooks and supplies in 1913-14, as shown in the *Annual Report of the U. S. Commissioner of Education for 1916,* Volume II, page 34.

i. *Interest and fixed charges.* (Table 2, Item 9). Estimated on the basis of the percent of total school expenditures, less expenditures for salaries of teachers, principals, and superintendents, capital outlays, and expenditures for textbooks and supplies devoted to meeting these charges in 1917-18, 1919-20, and 1921-22.

j. *Pupil transportation.* (Table 2, Item 10). The figure shown in Table 2 is exclusive of wages paid to drivers of school buses. It was estimated on the basis of the percent of total expenditures for auxiliary agencies devoted to this item in 1917-18, 1919-20, and 1921-22. This percent was then applied to the total expenditure for auxiliary agencies in 1913-14, estimated as described under "k" below, and from the result was deducted the estimated amount of wages paid to drivers of school buses, obtained as described under "a(6)" above.

k. *Auxiliary agencies and activities, other than pupil transportation.* (Table 2, Item 11). The figure shown here is exclusive of wages and salaries paid to persons employed in connection with these activities. It was obtained by applying to total school expenditures in 1913-14, less expenditures for salaries of teachers, principals, and superintendents, capital outlays, and textbooks and supplies, the percent of total school expenditures, less these same items in 1917-18, 1919-20, and 1921-22 which was devoted to expenditures for auxiliary activities and agencies. To the resulting estimated expenditure for auxiliary activities and agencies in 1913-14 were applied the percentages which expenditures for school libraries, school health services, and miscellaneous auxiliary activities and agencies represented of such expenditures in 1917-18, 1919-20, and 1921-22. From the resulting amounts were then subtracted the estimated salaries and wages obtained as described under "a(4)," "a(5)," and "a(8)," respectively.

2. Derivation of Figures on Eleven Items of School Expenditure in 1929-30 (Table 3)

All figures contained in Table 3 are as reported in the federal Office of Education's *Biennial Survey of Education, 1928-30,* "Statistics of State School Systems, 1929-30," except items 1, 10, and 11. Item 1, total salaries and wages paid to all classes of school employees, includes, in addition to salaries of teachers, principals, and supervisors as reported in Table 1, page 40, of the above cited volume: salaries of superintendents and their staffs and of business officials and employees, listed as "general control," and wages of school janitors listed under "operation" in Table 24, pages 72-73; and also 78.4 percent of expenditures for school libraries (estimated total of salaries paid school librarians), 95.9 percent of school health expenditures (estimated total salaries of persons employed in connection with school health services), 100 percent of expenditures for school attendance supervision, 8.62 prcent of expenditures for pupil transportation (estimated total of salaries paid drivers of school buses), and 50 percent of expenditures for miscellaneous activities and services (estimated expenditures of persons employed in connection with these services). Items 10 and 11 of Table 3 differ from the corresponding figures shown in Table 25, pages 74-75, of the *Biennial Survey of Education, 1928-30,* by the amounts of the estimated expenditures for salaries and wages which have been deducted. These estimates were derived in the same manner as the corresponding figures of Table 2, described above. Item 5, "operation of the school plant," equals the total expenditure for "operation" listed in Table 24, pages 72-73, less wages of janitors and engineers.

B. SOURCES OF INDEXES OF THE COST OF SEPARATE ITEMS OF THE SCHOOL BUDGET, CONTAINED IN TABLE 4

1. Index of the Cost of Services of All Classes of School Employees (Table 4, column 2)

INDEX OF AVERAGE WEEKLY WAGES OF UNSKILLED LABOR, 1914 TO 1936
(Used as a measure of changes in the cost of services of all classes of school employees, Table 4, column 2, and as a basis for tracing the trend of wages of unskilled labor, as shown by the dotted line curve in Figure IV)

Year	Average weekly wages, 1914-20[a]	Average weekly wages, 1920-36[b]	Index of weekly wages, 1914-20[d] (1920=100.00)	Index of weekly wages, 1920-36[e] (1920=100.00)	Weekly wages, 1914-36[f]	Index of weekly wages, 1914-36[g] (1914=100.00)
1	2	3	4	5	6	7
1914	$11.52	.....	45.18	.....	$11.77	100.00
1915	11.94	.....	46.82	.....	12.20	103.65
1916	13.08	.....	51.29	.....	13.37	113.59
1917	15.72	.....	61.65	.....	16.07	136.53
1918	21.54	.....	84.47	.....	22.01	187.00
1919	23.76	.....	93.18	.....	24.28	206.29
1920	25.50	$26.06	100.00	100.00	26.06	221.41
1921	.....	20.28	.....	77.82	20.28	172.30
1922	.....	20.30	.....	77.90	20.30	172.47
1923	.....	22.28	.....	85.50	22.28	189.29
1924	.....	22.41	.....	85.99	22.41	190.40
1925	.....	22.93	.....	87.99	22.93	194.81
1926	.....	23.21	.....	89.06	23.21	197.20
1927	.....	23.54	.....	90.33	23.54	200.00
1928	.....	23.89	.....	91.67	23.89	202.97
1929	.....	24.40	.....	93.63	24.40	207.31
1930	.....	21.90	.....	84.04	21.90	186.07
1931	.....	19.18	.....	73.60	19.18	162.96
1932	.....	14.48	.....	55.56	14.48	123.02
1933	.....	14.91	.....	57.21	14.91	126.68
1934	.....	16.42	.....	63.01	16.42	139.51
1935	.....	18.28	.....	70.15	18.28	155.31
1936	.....	19.74[c]	.....	75.75	19.74	167.71

[a] Compiled by Ralph G. Hurlin as part of a study of the movement of wages of unskilled laborers during the century 1820 to 1920 and quoted by Paul H. Douglas in *Real Wages in the United States, 1890-1926*, p. 175. Hurlin carried his series of figures back to 1820. They are quoted by Douglas as far back as 1890, as follows: 1913, $11.46; 1912, $10.98; 1911, $10.74; 1910, $10.68; 1909, $10.68; 1908, $10.38; 1907, $10.44; 1906, $10.08; 1905, $9.78; 1904, $9.66; 1903, $9.60; 1902, $9.36; 1901, $9.24; 1900, $8.94; 1899, $8.88; 1898, $8.82; 1897, $8.76; 1896, $8.76; 1895, $8.70; 1894, $8.96; 1893, $8.88; 1892, $8.88; 1891, $8.94; 1890, $8.82.

[b] From National Industrial Conference Board. *Wages, Hours and Employment in the United States.* New York: the Board, 1936. Table 4, p. 52-55.

[c] Based on figures for five months only.

[d] Figures of this column are the percents which the figures of column 2 are of $25.50.

[e] Figures of this column are the percents which the figures of column 3 are of $26.06.

[f] The figures of this column for the years 1920-36, inclusive, are the same as those of column 3. The figures for the years 1914-19, inclusive, are based on the assumption that average wages in the years prior to 1920 bore the same percentage relationship to $26.06 as the figures of the Hurlin series for the years 1914-19, inclusive, bore to $25.50. This is the method used by Douglas in obtaining the series of figures published in *Real Wages in the United States, 1890-1926*, Table 59, p. 177, except that Douglas extended the Hurlin series forward to 1926 by means of the National Industrial Conference Board figures, instead of extending the Conference Board figures backward to 1914 by means of the Hurlin figures as is done here. The Conference Board figures as used by Douglas have since been somewhat revised. For purposes of Figure IV, the series contained in column 6 was extended back to 1890 by the same method as that used in obtaining the figures for the years 1914-19. The figures back to 1890 are: 1913, $11.71; 1912, $11.22; 1911, $10.97; 1910, $10.91; 1909, $10.91; 1908, $10.61; 1907, $10.62; 1906, $10.30; 1905, $9.99; 1904, $9.87; 1903, $9.81; 1902, $9.56; 1901, $9.44; 1900, $9.14; 1899, $9.07; 1898, $9.01; 1897, $9.21; 1896, $9.21; 1895, $8.89; 1894, $8.95; 1893, $9.07; 1892, $9.07; 1891, $9.13; 1890, $9.01.

[g] Figures of this column are the percents which the figures of column 6 are of $11.77.

2. Index of Prices of School Textbooks, 1914-36 (Table 4, column 3)

PRICES OF TEXTBOOKS IN FIVE CURRICULUM FIELDS FURNISHED BY THREE SCHOOL PUBLISHING COMPANIES AND INDEX OF COST OF TEXTBOOKS BASED UPON THESE PRICES

(In dollars and fractions of dollars)

Year	Primer (Company #1)	Primer (Company #3)	Average primer	3d and 4th grade arithmetic (Company #1)	3d and 4th grade arithmetic (Company #2)	3d and 4th grade arithmetic (Company #3)	Average 3d and 4th grade arithmetic	Junior high-school science (Company #1)	Junior high-school science (Company #2)	Junior high-school science (Company #3)	Average junior high-school science	High-school American history (Company #1)	High-school American history (Company #2)	High-school American history (Company #3)	Average high-school American history	1st vol. of 2 vol. speller (Company #1)	1st vol. of 2 vol. speller (Company #2)	1st vol. of 2 vol. speller (Company #3)	1st vol. of 2 vol. average speller	Average of all textbook prices reported	Index of cost of textbooks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1914	.2800	.2250	.2525	.2800	.2800	.3000	.2867	.8000	.....	.....	.8000	1.2000	.....	.7500	.9750	.1600	.....	.1200	.1400	.49084	100.0
1915	.2800	.2250	.2525	.2800	.2800	.3000	.2867	.8000	.....	.....	.8000	1.2000	.....	.7500	.9750	.1600	.....	.1200	.1400	.49084	100.0
1916	.2800	.2250	.2525	.2800	.2800	.3000	.2867	.8000	.....	.....	.8000	1.2000	.....	.7500	.9750	.1600	.....	.1200	.1400	.49084	100.0
1917	.2800	.2250	.2525	.2800	.3400	.3000	.3067	.8000	.....	.....	.8000	1.2000	.....	.7500	.9750	.1600	.....	.1200	.1400	.49484	100.8
1918	.2800	.2700	.2750	.2800	.3400 .3300	.3000	.3067	.8000	.....	.....	.8000	1.2800	1.2800	.9000	1.0900	.1600	.....	.1500	.1550	.52534	107.0
1919	.3000	.3000 .3600	.3000	.3300	.3600 .3900 .4800	.3900	.3550	.9000	.....	1.0500	.9750	1.2900	1.23–1.260 1.290–1.320	.9600	1.1700	.2100	.....	.2100 .2700	.2100	.60200	122.6
1920	.4500	.4500	.4275	.4800	.4500 .6600	.5400	.5050	1.1100	1.2000	1.1400	1.1500	1.4700	1.4700	1.2000	1.3467	.3300	.....	.3900	.3300	.75184	153.2
1921	.4500	.5400	.4950	.4800	.6600	.6300	.5900	1.1100	1.2000	1.2000	1.1700	1.4700	1.4700	1.2900	1.3800	.4200	.....	.4500	.4350	1.81400	165.8
1922	.4500	.5100	.4800	.4800	.4800	.5700	.5100	1.1100	1.2000	1.2000	1.1700	1.4700	1.4700	1.2900	1.3800	.4200	.....	.3900	.4050	.78900	160.7
1923	.4500	.4500	.4500	.4800	.4800	.5400	.5000	1.1100	1.2000	1.2000	1.1700	1.4700	1.4700	1.2900	1.3800	.4200	.....	.3900	.4050	.78100	159.1
1924	.4500	.4500	.4500	.4800	.4800	.5400	.5000	1.2000	1.2000	1.2000	1.2000	1.4700	1.4700	1.2900	1.3800	.4200	.....	.3900	.4050	.78700	160.3
1925	.4500	.4500	.4500	.4800	.4800	.5400	.5000	1.2000	1.2000	1.2000	1.2000	1.4700	1.4700	1.4700	1.4700	.4200	.....	.3900	.4050	.80500	162.0
1926	.4500	.4500	.4500	.4800	.4800	.5400	.5000	1.2000	1.2000	1.2000	1.2000	1.4700	1.4700	1.4700	1.4700	.4200	.....	.3900	.4050	.80500	164.0
1927	.4500	.4500	.4500	.4800	.4800	.5700	.5100	1.2000	1.2000	1.2000	1.2000	1.4700	1.4700	1.4700	1.4700	.4200	.....	.3600	.3900	.80400	165.8
1928	.4500	.4500	.4500	.4800	.4800	.5700	.5100	1.2000	1.2000	1.2000	1.2000	1.4700	1.4700	1.4700	1.4700	.4200	.....	.3600	.3900	.80400	163.8
1929	.4500	.4500	.4500	.4800	.4800	.5700	.5100	1.2000	1.2000	1.2000	1.2000	1.4700	1.4700	1.4700	1.4700	.4200	.....	.3300	.3750	.80100	163.2
1930	.4500	.4500	.4500	.6000	.4800	.5700	.5500	1.2000	1.2000	1.2000	1.2000	1.4700	1.4700	1.4700	1.4700	.4200	.....	.3300	.3750	.80900	164.8
1931	.4500	.4500	.4500	.6000	.4800	.5700	.5500	1.2000	1.2000	1.2000	1.2000	1.4700	1.4700	1.4700	1.4700	.4200	.....	.3300	.3750	.80900	164.8
1932	.4500	.4500	.4500	.6000	.4800	.5700	.5500	1.2000	1.2000	1.2000	1.2000	1.4700	1.4700	1.4700	1.4700	.4200	.....	.3300	.3750	.80900	164.8
1933	.4500	.4500	.4500	.6000	.4800	.5700	.5500	1.2000	1.2000	1.2000	1.2000	1.4700	1.4700	1.4700	1.4700	.4200	.....	.3300	.3750	.80900	164.8
1934	.4500	.4500	.4500	.6000	.4800	.5700	.5500	1.2000	1.2000	1.2000	1.2000	1.4700	1.4700	1.4700	1.4700	.4200	.....	.3300	.3750	.80900	164.8
1935	.4500	.4500	.4500	.6000	.4800	.5700	.5500	1.2600	1.2000	1.2000	1.2200	1.4700	1.4700	1.4700	1.4700	.4200	.....	.3300	.3750	.81300	165.6
1936	.4500	.4500	.4500	.6000	.4800	.5700	.5500	1.2600	1.2000	1.2000	1.2200	1.5900	1.4700	1.4700	1.5100	.4200	.....	.3300	.3750	.81300	165.6

Sources: Figures of columns 2-3, 5-7, 9-11, 13-15, and 17-19 contain prices reported directly by three publishing companies.
Figures of columns 4, 8, 12, 16, and 20 are averages of columns 2-3, 5-7, 9-11, 13-15, and 17-19, respectively.
Figures of column 21 are the yearly averages of the figures contained in columns 4, 8, 12, 16, and 20.
Figures of column 22 represent the percents which the figures of column 21 are of .49084 cents.

3. Basic Figures Used in Computing the Index of School Supplies Shown in Table 4, Column 4

3. Basic Figures Used in Computing the Index of School Supplies Shown in Table 4, Column 4

PRICES OF SCHOOL SUPPLY ITEMS QUOTED BY SCHOOL SUPPLY HOUSES AND OTHER FIRMS HANDLING THESE ITEMS, WHOLESALE PRICE INDEXES OF FOUR CLASSES OF SCHOOL SUPPLY ITEMS AND INDEX OF THE COMBINED COST OF ALL SCHOOL SUPPLY ITEMS, 1914 TO 1936

	Prices quoted							Index of prices quoted							Index of wholesale prices				Index of combined cost of all school supply items[f] (Wt. = 100.0)
Year	Pencils[a]	Pens[b] (1 box)	Scissors[b] (1 dozen) (5-inch, sharp point)	Wax crayons[b] (1 box)	Chalk[b] (white) (1 gross)	Blackboard erasers[b] (1 dozen)	Battleship linoleum[b] (1 sq. yd.) (3-16-inch brown)	Pencils[c] (Wt. = 3.637)	Pens[d] (Wt. = 1.130)	Scissors[d] (Wt. = 4.696)	Wax crayons[d] (Wt. = 4.838)	Chalk[d] (white) (Wt. = 1.907)	Blackboard erasers[d] (Wt. = 1.236)	Battleship linoleum[d] (Wt. = 2.825)	Paper[e] (Wt. = 63.383)	Cotton goods[e] (Wt. = 3.142)	Paint[e] (Wt. = 11.017)	Lumber[e] (Wt. = 2.189)	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1914	.....	$0.65	$ 8.80	$0.05	$0.40	$1.17	$0.80	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1915	.....	0.65	8.80	0.05	0.40	1.17	0.80	100.0	100.0	100.0	100.0	100.0	100.0	100.0	97.4	93.4	108.1	97.6	99.0
1916	.....	0.65	8.80	0.05	0.40	1.17	0.90	100.0	100.0	100.0	100.0	100.0	100.0	100.0	113.0	152.9	122.7	152.1	110.4	140.6
1917	.....	0.65	8.80	0.05	0.50	1.42	1.27	100.0	100.0	100.0	100.0	125.0	122.2	158.8	193.6	176.2	187.6	144.7	162.1
1918	.....	0.65	10.80	0.05	0.50	1.43	1.54	100.0	100.0	122.7	100.0	125.0	122.2	192.5	183.3	261.8	240.0	167.3	175.6
1919	.....	0.65	12.40	0.05	0.53	2.37	2.61	100.0	100.0	140.9	100.0	132.5	202.6	326.3	197.8	263.4	277.7	226.5	197.9
1920	.....	0.65	12.40	0.05	0.65	2.88	2.45	100.0	100.0	140.9	100.0	162.5	246.2	306.3	312.4	340.5	292.1	331.1	279.2
1921	.....	0.65	12.40	0.05	0.75	2.51	1.82	100.0	100.0	140.9	100.0	187.5	214.5	227.5	184.9	177.7	165.2	178.2	173.6
1922	.....	0.65	9.60	0.05	0.75	2.03	1.82	100.0	100.0	109.1	100.0	187.5	173.5	227.5	154.2	186.3	184.6	198.6	155.2
1923	.....	0.65	10.00	0.05	0.75	1.88	1.65	100.0	100.0	113.6	100.0	187.5	160.7	206.3	176.6	208.8	199.8	224.0	171.8
1924	.....	0.65	10.00	0.05	0.75	1.72	1.75	100.0	100.0	113.6	100.0	187.5	147.0	218.8	173.0	204.8	96.6	199.0	157.6
1925	.....	0.65	10.00	0.05	0.75	2.15	1.63	100.0	100.0	113.6	100.0	187.5	183.8	203.8	180.8	196.4	215.6	201.6	175.5
1926	.....	0.65	10.00	0.05	0.63	2.15	1.80	100.0	100.0	113.6	100.0	157.5	183.8	225.0	171.8	178.6	197.2	200.4	167.8
1927	.....	0.65	10.00	0.05	0.63	1.89	1.53	100.0	100.0	113.6	100.0	157.5	161.5	191.3	161.2	173.4	189.6	186.6	158.2
1928	.....	0.65	10.00	0.05	0.63	1.71	1.56	100.0	100.0	113.6	100.0	157.5	146.2	195.0	157.0	179.3	183.6	181.4	154.6
1929	.....	0.65	10.00	0.05	0.63	1.71	1.62	100.0	100.0	113.6	100.0	157.5	146.2	202.5	152.7	176.4	187.2	188.0	152.5
1930	.....	0.65	10.00	0.05	0.63	1.67	1.90	100.0	100.0	113.6	100.0	157.5	142.7	237.5	147.9	151.3	178.5	171.9	148.3
1931	.....	0.65	10.00	0.05	0.63	1.59	1.59	100.0	100.0	113.6	100.0	157.5	135.9	198.8	139.9	118.0	156.6	139.3	137.9
1932	.....	0.65	10.00	0.05	0.60	1.81	1.42	100.0	100.0	113.6	100.0	150.0	154.7	177.5	129.7	96.4	140.2	117.2	128.0
1933	.....	0.65	10.00	0.05	0.60	1.77	1.18	100.0	100.0	113.6	100.0	150.0	151.3	147.5	131.6	127.1	144.6	141.7	130.3
1934	.....	0.65	10.00	0.05	0.65	2.33	1.425	100.0	100.0	113.6	100.0	162.5	199.1	178.1	142.1	154.5	156.8	169.3	141.4
1935	.....	0.65	10.00	0.05	0.65	2.31	1.565	100.0	100.0	113.6	100.0	162.5	197.4	195.6	137.5	148.9	157.4	162.5	138.7
1936	.....	0.65	10.00	0.05	0.64	2.35	1.565	100.0	100.0	113.6	100.0	160.0	200.9	195.6	138.7	143.4	158.0	169.3	139.5

[a] Exact figures on the movement of pencil prices could not be obtained. However, partial information as to changes in prices of certain types of pencils commonly used in the schools indicates: (1) that certain popular grades of pencils were to be had at the same price thruout the period; (2) that certain other grades of pencils increased from 10 to 20 percent in price between 1914 and 1930, but that on the average, sales of a lower quality of pencil represented a greater proportion of total sales of pencils toward the end of the period. It is probable, therefore, that we are not far wrong in holding constant the index of pencil prices contained in column 9.

[b] Columns 3-8, inclusive, show prices reported directly by companies handling the various items.

[c] See footnote [a] above.

[d] Figures of columns 10-15, inclusive, represent the percentage change from 1914 of the figures contained in the corresponding columns 3-8, inclusive.

[e] Figures of columns 16-19, inclusive, for the years 1914 thru 1935 are from Table 3 of the *Handbook of Labor Statistics*, 1936 edition, Bulletin No. 616, of the U. S. Department of Labor, Bureau of Labor Statistics. Figures of these columns for 1936 are from the *Monthly Labor Review* for February 1937, p. 507.

[f] Figures of column 20 are the weighted averages of the figures of columns 9-19, inclusive. Weights used are shown at the head of columns 9-19.

3. Basic Figures Used in Computing the Index of School Supplies *(Continued)*

WEIGHTED AVERAGE COST PER PUPIL IN AVERAGE DAILY ATTENDANCE OF ELEVEN ARTICLES OR CLASSES OF ARTICLES OF INSTRUCTIONAL SUPPLIES

Item	Cost[a]	Percent of total of eleven items[b]
1	2	3
Paper	$1.795	63.383
Cotton goods	0.089	3.142
Paint	0.312	11.017
Lumber	0.062	2.189
Chalk	0.054	1.907
Scissors	0.133	4.696
Wax crayons	0.137	4.838
Blackboard erasers	0.035	1.236
Pencils	0.103	3.637
Pens	0.032	1.130
Battleship linoleum	0.080	2.825
Total	$2.832	100.000

[a] Figures of column 2 were obtained by adding the unit prices per pupil in average daily attendance of each of the eleven items reported for each grade in the *Study of the Budgeting and Allotment of School Supplies,* by C. J. Anderson, John Guy Fowlkes, and L. F. Jones, and then weighting the total cost of each item in each grade by pupil enrolments in the corresponding grade and dividing by total enrolments in all grades. The sum of these averages, $2.83, is 88.5 percent of a total average cost of $3.20 per pupil in A. D. A. for all school supplies, reported in the above cited study, page 28, and obtained by the authors of that study by means of the same procedure.

[b] The percentages of column 3 are based on the figures of column 2. These percentages are the weights used in obtaining the weighted index of the cost of school supplies contained in column 20 of the table shown just below.

4. Index of Non-Residential Building Costs (Table 4, column 5)

The index numbers contained in Table 4, column 5, were obtained by weighting the indexes, published by the U. S. Department of Labor, Bureau of Labor Statistics, for union wage rates per hour in the building trades (*Union Scale of Wages in the Building Trades,* Bulletin No. 626, May 15, 1936, p. 5) and cost of building materials (*Handbook of Labor Statistics,* 1936 edition, p. 681), by 35.7 and 64.3, respectively. The weights were obtained from the statement on the distribution of non-residential building costs contained in the *Handbook of Labor Statistics,* 1936 edition, page 221.

5. Index of the Cost of School Building Sites (Table 4, column 6)

Information as to changes in the market value of a given unit of land was not available for the nation as a whole. While information of this type could be obtained for a few counties and cities, it could not be assumed that changes in land values in these localities were typical of nationwide changes in land values. It was necessary, therefore, for purposes of the index contained in Table 4, column 13, to assume that land values did not change between 1914 and 1930 and between 1930 and 1936. To the extent that changes in land values did take place during these periods, the index contained in Table 4, column 13, is defective.

6. Index of the Cost of School Building Equipment (Table 4, column 7)

The figures of Table 4, column 7, are those of the index of the cost of "house-furnishings goods" compiled by the U. S. Department of Labor, Bureau of Labor Statistics, and published in the *Monthly Labor Review* for September 1937, Table 4, column 7, page 683. The articles priced by the Bureau of Labor Statistics in connection with this index include: wool rug, grass rug, linoleum, living-room chair, library or living-room table, dining table, kitchen table, sanitary couch or bed, dresser, chiffonier, buffet, bedstead, bed spring, mattress, baby carriage, pillowcase, sheet, tablecloth, cotton towel, cotton blankets, wool blankets, comfort, cook stove (coal, wood, gas, or oil), broom, sewing machine, refrigerator.

7. Index of the Cost of Operating the School Plant, Exclusive of Wages Paid to Engineers and Janitors (Table 4, column 8)

The figures of Table 4, column 8, are those which form the index of the cost of fuel and light, compiled by the U. S. Department of Labor, Bureau of Labor Statistics, and published in the *Monthly Labor Review* for September 1937, Table 4, column 6, page 683.

8. Index of the Cost of Maintaining the School Plant in Good Repair (Table 4, column 9)

The index numbers contained in Table 4, column 9, are the same as those of Table 4, column 5.

9. Index of Changes in Rates of Interest on School Indebtedness, and in Fixed Charges (Table 4, column 10)

No figures could be obtained which represented the movement of rates of interest on school indebtedness and of charges for rent, insurance, and certain other payments made by school districts thruout the nation. It was necessary, therefore, to hold this cost constant thruout the 1914-30 and 1930-36 periods. It is probable that data on changes in these costs can be obtained by individual school districts, locally.

10. Index of the Cost of Transporting Pupils between School and Home

On the basis of a study made in the state of Iowa by T. R. Agg and H. S. Carter (*Iowa State College Bulletin, No. 91,* quoted by the National Automobile Chamber of Commerce in *Facts and Figures of the Automobile Industry, 1929,* page 74), more than half (52 percent) of the total cost of automobile operation was accounted for by: (1) depreciation; (2) the cost of motor fuel; and (3) the cost of tires and tubes. Assuming that other factors in the total cost, such as license, interest, insurance, and garage, remained constant, and raising the percent represented by each of the three first-named factors to add up to 100, the weights of 41.6, 39.2, and 19.2 were obtained for depreciation, gasoline, and tires and tubes, respectively. By multiplying the index of wholesale prices of motor vehicles (U. S. Department of Labor, Bureau of Labor Statistics, *Handbook of Labor Statistics,* 1936 edition, Bulletin No. 616, Table 3, page 679) by 41.6, the index of wholesale prices of tires and tubes (also published in Bureau of Labor Statistics, Bulletin No. 616, Table 3) by 19.2, and an index of gasoline prices per gallon, built upon the percentage changes from 1914 in these prices (as furnished to the Research Division by the American Petroleum Institute), by 39.2, adding the resulting products, and dividing by 100, the index numbers of Table 4, column 11, of this bulletin were obtained. The American Petroleum Institute was able to give information on prices per gallon of gasoline at filling stations as far back as 1919. Tank-wagon prices were available, however, for the years 1914-18, inclusive. In order to obtain a complete series of index numbers measuring changes in gallonage prices of gasoline from 1914 to 1936, inclusive, it was assumed that gasoline prices at filling stations for each of the years 1914 thru 1918 bore the same relation to the price per gallon of gasoline at filling stations in 1919 as the tank-wagon price of gasoline in each of the years 1914 thru 1918 bore to the tank-wagon price of gasoline in 1919.

11. Index of the Combined Cost of School Health Services, School Libraries, and School Lunches and School Cafeterias, Exclusive of Salaries and Wages Paid in Connection with These Activities (Table 4, column 12)

The index numbers contained in Table 4, column 12, were obtained by weighting and combining, as described in this bulletin, page 152: (1) the index of the cost of miscellaneous goods and services compiled by the United States Department of Labor, Bureau of Labor Statistics, as a part of their index of the cost of living (published in the *Monthly Labor Review* for September 1937, Table 4, column 8, page 683); (2) the index of the cost of school textbooks (contained in Table 4, column 3, this bulletin); and (3) the federal Bureau of Labor Statistics' index of the cost of food (*Monthly Labor Review* for September 1937, Table 4, column 3, page 683). More than half of the 43 items priced in connection with the Bureau of Labor Statistics' index of the cost of miscellaneous goods and services are in the nature of medical and dental services, medicine, and supplies and services connected with personal hygiene.

C. BASES OF ESTIMATES OF WEIGHTED AGGREGATE ATTENDANCE, 1914, 1930, AND 1936

1. Weighted Aggregate Attendance in 1913-14

The *Annual Report of the U. S. Commissioner of Education for 1916,* Vol. II, "Statistics of City School Systems," Table 1, pages 47-48, gives the cost per pupil in average daily attendance in elementary schools in cities, 10,000 in population and over, as $37.05. The cost per pupil in average daily attendance in high schools in these cities was $92.99. On the basis of these figures the ratio of elementary-school costs to high-school costs in cities of this size is 1 to 2.5.

In 1913-14, 6.4 percent of total enrolments was in high schools. Increasing this percent in the same proportion that the percent of enrolments in high school was to the percent of aggregate attendance which was in high schools in 1929-30, the estimated percent of the total aggregate attendance which was in high schools in 1913-14 is 8.7.

The total aggregate days of attendance in 1913-14 was 2,255,657,142. Applying the above percent (8.7) to this figure the estimated number of days of aggregate attendance of high-school pupils in 1913-14 was 196,242,171. Weighting each of these days of high-school attendance by 2.5 in accordance with the cost ratio figures cited above, a total weighted aggregate attendance of 2,550,020,399 in 1913-14 is obtained.

2. Weighted Aggregate Attendance, 1929-30

The *Biennial Survey of Education, 1928-30,* "Statistics of State School Systems, 1929-30," Table 6, page 47, published by the U. S. Department of the Interior, Office of Education, gives figures on the aggregate days of attendance in elementary schools, and all types of schools above the elementary level, for thirty-five states. The figures are as follows:

Aggregate number of days attended in:

Elementary schools	2,007,727,498
All other types of schools	610,442,805
Total	2,618,170,295

Percent of aggregate days of attendance in:

Elementary schools	76.7
All other types of schools	23.3
	100.0

The aggregate number of days attended by both elementary- and secondary-school pupils in the nation as a whole in 1929-30 was 3,672,765,005 (*Biennial Survey of Education, 1928-30,* p. 47). Applying to this figure the above percentage distribution, the following estimated aggregate attendance is obtained for (1) elementary schools and (2) for all other schools combined, in the nation as a whole.

Aggregate days of attendance in:

Elementary schools	2,817,010,759
All other types of schools	855,754,246
Total	3,672,765,005

Weighting each day of elementary-school attendance by 1, and each day of high-school attendance by 2.5, as in 1914, the estimated weighted aggregate number of days attended in 1929-30, is 4,957,069,972. This is an increase of 94 percent in weighted aggregate attendance between 1914 and 1930.

3. Weighted Aggregate Attendance in 1935-36

Figures on aggregate days of attendance in different types of schools in 1935-36 have not yet been published. Using partial data on the aggregate days of attendance in ten states, the following percentage distribution is obtained:

Percent of aggregate days attended in:

Elementary schools	69.6
All other types of schools	30.4
	100.0

The total aggregate number of days attended in 1935-36 was 3,857,686,691. Applying the above percentages to this figure, the following estimated aggregate attendance in elementary and high schools, separately, is obtained.

Aggregate days attended in:

Elementary schools	2,683,534,886
All other types of schools	1,174,151,805
Total	3,857,686,691

Weighting each day of elementary-school attendance by 1, and each day of secondary-school attendance by 2.5, as in 1914, an estimate of 5,618,914,399 weighted days of aggregate attendance is obtained. This is an increase of about 13 percent over the weighted aggregate attendance of 4,957,498,204 days in 1929-30.

PUBLICATIONS ON RELATED TOPICS . . . .

School Finance Systems. Summaries describing the plan of state support for schools in 46 states (issued in 1934 and 1935) $2. Revised School Finance Systems, covering 7 states (issued in June 1937) 35¢. Revised School Finance Systems, No. 2, covering 6 states (issued in January 1938) 30¢.

Federal Support for Education; the Issues and the Facts. *Research Bulletin,* Vol. 15, No. 4; September 1937. 32 p. 25¢.

Financing Public Education. *Research Bulletin,* Vol. 15, No. 1; January 1937. 56 p. 50¢.

The Efforts of the States To Support Education. *Research Bulletin,* Vol. 14, No. 3; May 1936. 64 p. 50¢.

Five Years of State School Revenue Legislation, 1929-33. *Research Bulletin,* Vol. 12, No. 1; January 1934. 40 p. 25¢.

Report of National Conference on the Financing of Education. 78 p. 25¢.

Schools and Taxes. June 1935. 16 p. 25¢.

Finance and Business Administration. *Review of Educational Research,* Vol. 8, No. 2; April 1938. 112 p. $1.

All orders for publications should be accompanied by funds in payment for same and must be so accompanied when orders for material amount to $1 or less. Orders not accompanied by funds in payment are subject to transportation charges. Discounts on quantity orders of the same publication: 2-9 copies, 10 percent; 10-99 copies, 25 percent; 100 or more copies, 33⅓ percent. Make checks or money orders payable to the National Education Association of the United States, 1201 Sixteenth Street, N. W., Washington, D. C.

THE ideal of equality of opportunity through education has not yet been fully realized because in many areas and at certain levels education is not effectively free. The realization of the ideal waits upon the removal of all barriers, whether economic or social, which result in a denial of educational opportunity to those whose continued education is clearly indicated as desirable to society and to the individual on the basis of his ability, ambition, and character.

Effectively free education involves, in addition to free tuition, the provision of books and educational supplies; in many cases, of transportation; and in some cases, of maintenance grants necessitated by the low income of the family group from which the pupil comes.—*Educational Policies Commission, The Structure and Administration of Public Education in the United States.*